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(71) Applicant *(for all designated States except US)*: QPASS, INC. [US/US]; Suite 500, 83 South King Street, Seattle, WA 98104 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: COCKRILL, Michael, P. [US/US]; 2350 West Lake Sammamish Parkway NE, Redmond, WA 98052 (US). BRYANT, William, K. [US/US]; 170 Prospect Street, Seattle, WA 98109 (US). FRANKLIN, D., Chase [US/US]; 159 Ward Street, Seattle, WA 98109 (US). MCNEELY, Mark, H. [US/US]; 9425 SE 52nd, Mercer Island, WA 98040 (US). RYAN, Timothy, J. [US/US]; 16751 NE 137th Street, Woodinville, WA 98072 (US). SWEET, Andrew, P. [US/US]; 16222 193rd Avenue SE, Renton, WA 98058 (US). SIADEK, Steven, J. [US/US]; Unit A, 1723 – 25th Avenue, Seattle, WA 98122 (US). FAITH, Ronald, R., Jr. [US/US]; 10408 NE 190th, Bothell, WA 98011 (US). GORIS, J., Mark [US/US]; 3446 – 33rd Avenue West, Seattle, WA 98199 (US). MALEK, Thor, A. [US/US]; 36514 Mann Road, Sultan, WA 98294 (US).

(74) Agents: DONOHUE, Michael, J. et al.; Seed and Berry LLP, Suite 6300, 701 Fifth Avenue, Seattle, WA 98104–7092 (US).

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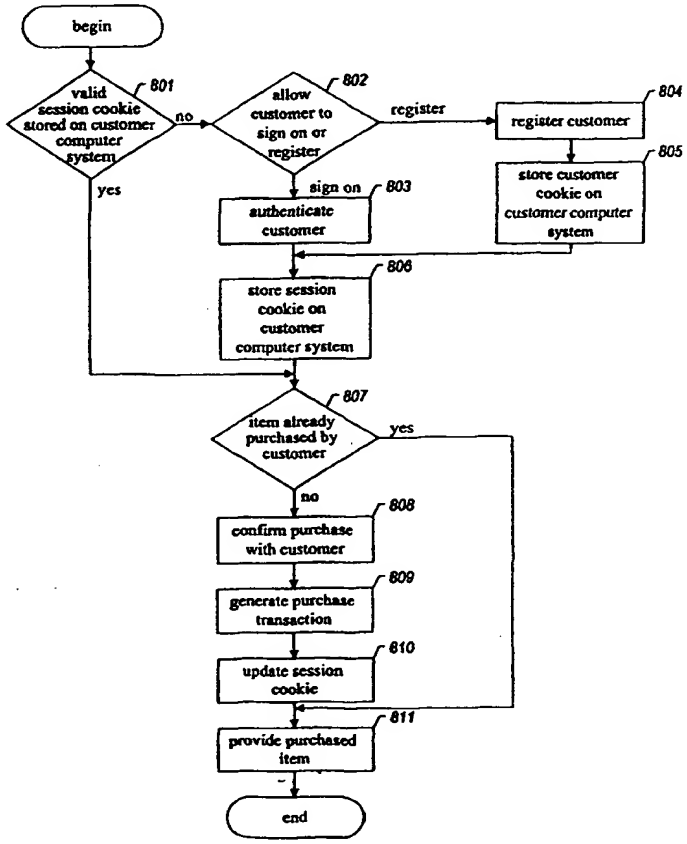
(54) Title: ELECTRONIC COMMERCE USING A TRANSACTION NETWORK

(57) Abstract

The present invention is directed to a transaction network that facilitates and simplifies purchase transactions between any number of customers and any number of merchants. The transaction network is primarily utilized in the sale and purchase of digital content via a network such as the Internet. The transaction network registers and authenticates customer purchase activities and maintains customer account data including payment information. Once registered, a customer will generally not register again for further purchase activities at participating merchant sites. Additionally, the transaction network provides a single, central authentication mechanism for all participating merchant sites using a single customer identifier and password. Further, the transaction network accumulates purchase information across all of the merchant sites and the ultimate payment processing of those purchase transactions. Payment processing generally occurs on a periodic basis, enabling the accumulation of multiple purchase transactions within a participating customer's account. The network additionally preferably provides customers with centralized, automated services for customer account management, product refunds, subscription management, and multiple purchasing accounts linked to the same payment account.



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ELECTRONIC COMMERCE USING A TRANSACTION NETWORK

TECHNICAL FIELD

The present invention is directed to the field of electronic commerce, and more particularly, to the field of facilitating user registration and authentication, purchasing from multiple merchants, aggregating payment transactions, and merchant remittance for electronic commerce transactions, such as those conducted on the Internet.

BACKGROUND OF THE INVENTION

The World Wide Web ("the Web") is an interactive computer environment. The Web uses a collection of common protocols, including the Hypertext Transfer Protocol ("HTTP"), and file formats, including Hypertext Markup Language ("HTML"), to enable users to obtain information from or exchange information with a huge number of organizations, via the Internet, from virtually anywhere in the world. In order to establish a presence on the Web, organizations generally construct a "Web site." Such a Web site generally includes a collection of documents relating to the organization that is accessible by users using an address on the Web, called a Universal Resource Locator ("URL"), publicized by the organization.

The Web is increasingly used as a channel for commercial activity. Many organizations have achieved great success at selling products and services through their Web sites. For instance, a significant fraction of the airline tickets, music compact discs, and books sold today are sold via the Web.

In order to attract customers for such sales, a merchant must generally advertise its Web site on the Web or another more traditional media, or otherwise pay to attract customers. In most such sales, the purchase price is paid using a credit card or check card. In order to complete such a purchase, the customer provides to the merchant information associated with the credit card or check card, such as the number and expiration date of the credit card or check card. The customer commonly

also provides additional information about himself or herself, such as name and postal address for delivering physical goods.

The merchant uses the provided credit card or debit card information to generate a request for payment of the purchase price, which it transmits to a payment processor. The payment processor in turn charges the purchase price to the customer's credit card or check card, and credits the merchant's account in the amount of the purchase price. For a particular customer, this process is generally repeated for each merchant from which the customer makes a purchase. Similarly, a merchant generally repeats this process for each purchase made by a customer.

The foregoing approach is efficient for purchases having a significant purchase price, such as those above US$ 20. However, because a significant portion of the actual costs of processing a credit card or check card transaction are fixed and not related to the amount of the transaction, processing credit card transactions for lower amounts is generally cost-prohibitive. As a result, credit card and check card transactions are generally not used to purchase goods and services having a relatively low price, such as those below US$ 20. Additionally, the high cost of providing customer service on the Internet, including such recurring operations as supplying lost passwords, raises the cost for selling goods, thus raising the minimum price at which goods must be sold to realize a profit.

While other forms of payment, such as cash proxies, have been proposed for use in such lower-priced transactions, these other forms of payment have failed to achieve acceptance on the Web. This is largely due to the amount of extra interaction that these cash proxy payment methods require from the customer, as customers are often unwilling to tolerate a great deal of inconvenience to purchase an inexpensive item. Moreover, even if such an alternative form of payment did achieve acceptance on the Web, they typically impose significant processing costs on those merchants that accept them, and do nothing to alleviate customer service costs.

Since credit card and check card transactions are the only forms of payment that have achieved general acceptance on the Web, it is generally not possible to buy such lower-priced goods and services on the Web. These lower-

priced purchases are, however, important. In particular, digital goods, such as electronic magazine articles, music, or games, delivered via the Web have a very small marginal cost. While there may be a significant demand for some digital goods if priced at appropriately modest levels, when their price is set at or above the minimum viability threshold for credit card and check card transactions, demand is very low or nonexistent. Therefore, because goods cannot be sold via credit card or check card at a price below the minimum viability threshold, and there is little demand at or above the minimum viability threshold, such goods are incapable of generating significant revenue and generally are not offered for sale.

The transactional model discussed above, in which customers make purchases directly from merchants using credit card or check card transactions, have serious disadvantages for both customers and merchants. First, as noted above, low-priced purchases are generally impossible to conduct using this model, which generally precludes customers from purchasing and merchants from selling certain products, and limits the number of customers that can purchase others. Further, the model requires each customer to expend significant effort managing his or her relationship with each merchant, and also requires each merchant to make significant up-front and continuing investments in managing its relationship with its customers and with its payment processor.

Figure 1 is a relationship diagram showing the relationships arising between customers, merchants, and payment processors in accordance with the conventional transaction model. The diagram shows a number of customers 110, who engage in purchase transactions with a number of merchants 120. Each line between a customer 110 and a merchant 120 represents a relationship between the customer and the merchant that must be managed by both the customer and the merchant.

From the customer's perspective, he or she must provide credit card or check card payment information to each new merchant from which the customer makes a purchase. To do so is generally both inconvenient, because the customer must enter the same information over and over, and disconcerting, because the

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customer is required to entrust this sensitive information to several different parties, one or more of which may be untrustworthy. In addition, customers must learn the customer service policies of every merchant from which they purchase, which can be a burdensome process, especially for modestly-priced purchases.

From the merchant's perspective, it must build, operate, and scale up an infrastructure for accepting credit or check card payments from customers, for delivering purchased goods, and for providing customer service to those customers. Such infrastructures are generally expensive, and often distract merchants from their more fundamental role of creating and selling products.

Further disadvantages arise in the conventional model when a merchant subjects customers to user authentication. Merchants often use user authentication, the process of establishing that a Web user is actually a returning customer, to enable customers to make subsequent purchases using the payment information from a previous purchase, or to facilitate continuing consumption of purchased goods, such as continued access to an online periodical to which the customer has purchased a subscription. Generally, in order to authenticate as a returning customer, a user must enter a user name and password that is specific to each merchant. From the customer's perspective, submitting to user authentication involves the disadvantages of having to use a user name that is unique among those of each merchant's customers and thus is not always freely chosen by the customer, having to remember or record each of these different member names, and having to re-authenticate each time the customers move from the Web site of one merchant to the Web site of another, which can prove burdensome and frustrating for users.

From the merchant's perspective, performing user authentication involves the disadvantages of having to build, operate, and scale up a mechanism for performing user authentication and a customer database to support user authentication, an effort that is potentially both costly and distracting. In addition to relationships with its customers, in the conventional model a merchant must also maintain a relationship with a payment processor 130 to process credit or check card transactions. Maintaining a relationship with a payment processor requires the

merchant to shop for and negotiate a contract with a payment processor, and to build, operate, and scale up a mechanism for communicating with the payment processor, another effort that is potentially both costly and distracting.

It can be seen from the foregoing that, from the perspective of merchants, a reliable system for selling goods, including lower-priced goods on the Web, without having to develop an infrastructure for accepting payment, for registering and authenticating customers would have significant utility, or for providing customer support. It can further be seen that, from the perspective of customers, a convenient system that facilitates the purchase of goods, including lower-priced goods from a number of different merchants without having to submit payment information to each merchant or reauthenticate to each merchant, and which provides centralized customer service for purchases made from multiple merchants would also have significant utility.

SUMMARY OF THE INVENTION

The present invention provides a new type of transaction network ("the network") for facilitating purchase transactions between any number of customers and any number of merchants participating in the network. The network is well-suited to the purchase of low-priced "digital goods," as well as the purchase of other products and services, especially those having relatively low prices, and enables customer to use traditional forms of payment, such as credit cards. The network relieves merchants of the burdens of each maintaining a separate infrastructure for authenticating and accepting payment from customers, delivering goods, and providing customer service. The network further provides a single registration process during which the customer provides credit card payment information once for all of the merchants, as well as universal authentication to the Web sites of all of the merchants through a single user interaction. The network yet further facilitates the migration of large existing groups of users from other authentication systems, such as those of merchants, to the authentication system provided by the network. The network additionally preferably provides customers with centralized, automated

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services for customer account management, product refunds, subscription management, and multiple purchasing accounts linked to the same payment account.

Figure 2 is a relationship diagram showing the relationships defined for customers and merchants by the network. It can be seen that each customer 210, rather than maintaining a separate purchasing relationship with each merchant 220, need only maintain a single purchasing relationship with the network 240. This means that the customer need only provide payment information and to register and authenticate to the network, not to each merchant. Similarly, each merchant 220, rather than maintaining a relationship with each customer 210, need only maintain a single relationship to the network. This means that, rather than providing infrastructure for accepting payment from customers, delivering goods to customers, registering and authenticating customers, and providing customer service, the merchants may rely upon corresponding functionalities of the network. Further, rather than themselves maintaining a relationship with a charge processor 230, the merchants 220 can rely on the relationship with the charge processor maintained by the network 240. Participation in the network thus frees both customers and merchants of the substantial burdens of the conventional transaction model described above.

In accordance with the present invention, a new customer may visit the Web site of any merchant. When the user selects, on the merchant's Web site, a product or service (hereafter "item") for purchase, the network determines whether the customer is presently registered and authenticated with the network. If the customer is not presently registered, the network enables the customer to register with the network by providing identity and payment information. The identity information provided by the customer preferably includes a member identifier and a password for use with the network, as well as an electronic mail ("email") address. The payment information preferably includes a credit card number, or other information usable to charge the customer for purchases. As part of registration process, the network preferably verifies the provided payment information. At the conclusion of registration process, the registered customer is permitted to purchase the item. As a

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result of the purchase, the purchased item is provided to the customer, and a transaction record is created that identifies the customer, the merchant, and the amount of the purchase. The visual user interfaces for these registration and purchase processes are preferably cobranded with the trademarks of the merchant and the operator of the network, to indicate that both parties are collaborating in providing the purchasing experience enjoyed by the customer.

After the customer has registered, the customer is effectively signed on to the network for a period of time, such as several hours. After registering, the customer may again sign on to the network by identifying, "or authenticating," himself or herself to the network by entering the member identifier and password. During the time that the customer is signed on, the customer may browse and purchase items from any Web site in the network without repeating the authentication process.

The network periodically reviews the unbilled purchase transaction records of each customer resulting from purchases made by the customer at any site. When the amounts of these records exceed a threshold value, preferably determined based upon the amount at which the transaction costs for the form of payment provided by the customer become reasonable, the network generates a payment request requesting payment of the total amount. The network then combines the payment requests generated for a number of users and transmits them to a payment processor for payment. The payment processor returns a settlement indication for each payment request indicating that the payment request has been settled or declined.

At this point, the merchants from whom the customer purchased the items are each credited with a portion of the corresponding purchase price, and the purchase transaction records represented by the payment request are marked as paid. In this manner, the network efficiently facilitates purchase transactions having relatively low purchase amounts using traditional forms of payment. The network further facilitates purchases having relatively low prices by providing centralized services for seeking refunds and managing subscriptions, and by providing multiple

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purchasing accounts linked to a single payment account. By providing these customer service functionalities to merchants, the network substantially lowers merchants' transaction processing costs, thereby enabling merchants to offer for sale modestly-priced goods.

In a further embodiment, during registration, the network permits the customer to provide a member identifier that is not unique among all of the customers of the network. In this embodiment, the network stores a unique identifier for the customer, along with the member identifier specified by the customer, in a cookie on the customer's computer system. When the customer subsequently authenticates by providing the member identifier, the network uses the member identifier to find the unique identifier on the customer's computer system, and uses the member identifier together with the unique identifier to authenticate the customer. In this way, the network allows customers to use non-unique member identifiers. This improves the customer experience for all customers, as it enables them to choose a particular member identifier without regard for its use by other customers. This is especially valuable where the network has a large number of customers. Facilitating non-unique member identifiers also permits the operator of the network to "absorb" or "import" existing groups of customers from other online services, where they already have member identifiers to which they are accustomed, and which may be redundant with the member identifiers of other customers of the network.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a relationship diagram showing the relationships arising between customers, merchants, and payment processors in accordance with the conventional transaction model.

Figure 2 is a relationship diagram showing the relationships defined for customers and merchants by the network.

Figure 3 is a high-level block diagram of the computer network environment in which the transaction network preferably operates.

Figure 4 is a high-level block diagram of a typical merchant computer system.

Figure 5 is a high-level block diagram of a typical customer computer system.

Figure 6 is a high-level block diagram of a typical network service center computer system.

Figure 7 is a screen shot diagram showing a Web page displayed by a merchant.

Figure 8 is a flow diagram showing the steps preferably performed by the network as part of the purchasing process.

Figure 9 is a flow diagram showing the steps preferably performed by the network in order to authenticate a customer.

Figure 10 is a screenshot diagram showing the sign on dialog preferably displayed by the network to collect the member identifier and password.

Figure 11 is a flow diagram showing the steps preferably performed by the network in order to register the customer with the network.

Figure 12 is a screenshot diagram showing a registration dialog 1200, into which the user enters personal and payment information.

Figure 13 is a screenshot diagram showing a confirmation dialog preferably displayed by the network in step 808.

Figure 14 is a screenshot diagram showing provision of a purchased item.

Figure 15 is a screenshot diagram showing a Web page of a second merchant.

Figure 16 is a screenshot diagram showing the confirmation dialog displayed in response to the customer's selection of link 1524.

Figure 17 is a screenshot diagram showing the provision of the additional purchased item.

Figure 18 is a table diagram showing the transaction database maintained by the network.

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Figure 19 is a flow diagram of the steps preferably performed by the network in order to aggregate the transaction records in the transaction database into authorizations sent to a payment processor.

Figure 20 is a flow diagram showing the steps preferably performed by the network in order to process a settlement report.

Figure 21 is a screenshot diagram showing a sample customer statement.

Figure 22 is a screenshot diagram showing a sample item information page.

Figure 23 is a screenshot diagram showing a sample refund request.

Figure 24 is a screenshot diagram showing a sample confirmation screen confirming a refund request.

Figure 25 is a screenshot diagram showing a sample statement reflecting the submission of a refund request.

Figure 26 is a screenshot diagram showing a sample subscription management page.

Figure 27 is a screenshot diagram showing a sample subscription information page.

Figure 28 is a screenshot diagram showing a sample registration page for registering an additional purchasing account for an existing payment account.

Figure 29 is a screenshot diagram showing a sample customer statement showing purchases made with the additional purchasing account.

Figure 30 is a screenshot diagram showing a sample customer statement showing purchases made with multiple purchasing accounts that are each associated with the same payment account.

DETAILED DESCRIPTION OF THE INVENTION

The present invention provides a new type of transaction network ("the network") for facilitating purchase transactions between any number of customers and any number of merchants participating in the network. The network is well-

suited to the purchase of low-priced "digital goods," as well as the purchase of other products and services, especially those having relatively low prices, and enables customer to use traditional forms of payment, such as credit cards. The network relieves merchants of the burdens of each maintaining a separate infrastructure for authenticating and accepting payment from customers, delivering goods, and providing customer service. The network further provides a single registration process during which the customer provides credit card payment information once for all of the merchants, as well as universal authentication to the Web sites of all of the merchants through a single user interaction. The network yet further facilitates the migration of large existing groups of users from other authentication systems, such as those of merchants, to the authentication system provided by the network. The network additionally preferably provides customers with centralized, automated services for customer account management, product refunds, subscription management, and multiple purchasing accounts linked to the same payment account.

Figure 2 is a relationship diagram showing the relationships defined for customers and merchants by the network. It can be seen that each customer 210, rather than maintaining a separate purchasing relationship with each merchant 220, need only maintain a single purchasing relationship with the network 240. This means that the customer need only provide payment information to register and authenticate the network, not to each merchant. Similarly, each merchant 220, rather than maintaining a relationship with each customer 210, need only maintain a single relationship to the network. This means that, rather than providing infrastructure for accepting payment from customers, delivering goods to customers, registering and authenticating customers, and providing customer service, the merchants may relay upon corresponding functionalities of the network. Further, rather than themselves maintaining a relationship with a charge processor 230, the merchants 220 can rely on the relationship with the charge processor maintained by the network 240. Participation in the network thus frees both customers and merchants of the substantial burdens of the conventional transaction model described above.

In accordance with the present invention, a new customer may visit the Web site of any merchant. When the user selects, on the merchant's Web site, a product or service (hereafter "item") for purchase, the network determines whether the customer is presently registered and authenticated with the network. If the customer is not presently registered, the network enables the customer to register with the network by providing identity and payment information. The identity information provided by the customer preferably includes a member identifier and a password for use with the network, as well as an electronic mail ("email") address. The payment information preferably includes a credit card number, or other information usable to charge the customer for purchases. As part of registration process, the network preferably verifies the provided payment information. At the conclusion of registration process, the registered customer is permitted to purchase the item. As a result of the purchase, the purchased item is provided to the customer, and a transaction record is created that identifies the customer, the merchant, and the amount of the purchase. The visual user interfaces for these registration and purchase processes are preferably cobranded with the trademarks of the merchant and the operator of the network, to indicate that both parties are collaborating in providing the purchasing experience enjoyed by the user.

After the customer has registered, the customer is effectively signed on to the network for a period of time, such as several hours. After registering, the customer may again sign on to the network by identifying, "or authenticating," himself or herself to the network by entering the member identifier and password. During this time that the customer is signed on, the customer may browse and purchase items from any Web site in the network without repeating the authentication process.

The network periodically reviews the unbilled purchase transaction records of each customer resulting from purchases made by the customer at any site. When the amounts of these records exceed a threshold value, preferably determined based upon the amount at which the transaction costs for the form of payment provided by the customer become reasonable, the network generates a payment

request requesting payment of the total amount. The network then combines the payment requests generated for a number of users and transmits them to a payment processor for payment. The payment processor returns a settlement indication for each payment request indicating that the payment request has been settled or declined.

At this point, the merchants from whom the customer purchased the items are each credited with a portion of the corresponding purchase price, and the purchase transaction records represented by the payment request are marked as paid. In this manner, the network efficiently facilitates purchase transactions having relatively low purchase amounts using traditional forms of payment. The network further facilitates purchases having relatively low prices by providing centralized services for seeking refunds and managing subscriptions, and by providing multiple purchasing accounts linked to a single payment account. By providing these customer service functionalities to merchants, the network lowers their transaction processing cost substantially, thereby enabling merchants to offer for sale modestly-priced goods.

In a further embodiment, during registration, the network permits the customer to provide a member identifier that is not unique among all of the customers of the network. In this embodiment, the network stores a unique identifier for the customer, along with the member identifier specified by the customer, in a cookie on the customer's computer system. When the customer subsequently authenticates by providing the member identifier, the network uses the member identifier to find the unique identifier on the customer's computer system, and uses the member identifier together with the unique identifier to authenticate the customer. In this way, the network allows customers to use non-unique member identifiers. This improves the customer experience for all customers, as it enables them to choose a particular member identifier without regard for its use by other customers. This is especially valuable where the network has a large number of customers. Facilitating non-unique member identifiers also permits the operator of the network to "absorb" or "import" existing groups of customers from other online services, where they already have

member identifiers to which they are accustomed, and which may be redundant with the member identifiers of other customers of the network.

Figure 3 is a high-level block diagram of the computer network environment in which the transaction network preferably operates. Merchant computer systems 310 are computer systems operated by or on behalf of merchants that make items available for purchase by customers of the network. Merchant computer systems 310 preferably each provide a Web server that serves Web pages, some of which offer items for sale. The merchant computer systems 310 are connected to customer computer systems 330 via a network 320, such as the Internet. The customer computer systems 330 are usable by customers to browse the Web pages served by the merchant computer systems 310. When doing such browsing, a customer may use a customer computer system 330 to purchase an item offered for sale. Such purchase is communicated over the network 320 to a network service center computer system, which makes a record of the transaction. The network service center computer system 340 periodically collects together transactions entered into by each user, aggregates them into requests for payment, and forwards these payment requests over a secure network 350 to a payment processor computer system 360 for payment. The configurations of several of the computer systems shown in Figure 3 are discussed below in conjunction with Figures 4-6. While the network is preferably implemented on computer systems configured in this manner, those skilled in the art will recognize that the network may be advantageously implemented on combinations of computer systems other than those shown in these figures.

Figure 4 is a high-level block diagram of a typical merchant computer system. The merchant computer system 310 includes one or more central processing units ("CPUs") 410, and a network connection 420 for connecting to the network 320. The merchant computer system further comprises computer storage 430, which may include both transient storage devices, such as random access memory, and persistent storage devices, such as hard drives. The storage preferably includes an HTTP server program 431 for serving Web pages 432 offering items for sale. The storage preferably also includes: a product database 433 for storing items offered for sale; a

transaction engine 434 provided by the operator of the network to conduct the sale and delivery of items to authenticated customers and an authorization subsystem program 435, provided by the operator of the network to manage authorization of customers to the merchant Web site. The merchant computer system further includes a computer-readable media drive 440, which can be used to install software products, including the network, which are provided on a removable computer-readable medium, such as a CD-ROM or a DVD.

Figure 5 is a high-level block diagram of a typical customer computer system. The customer computer system 330 has one or more CPUs 510 and a network connection 520. The customer computer system further has a visual display 530, such as a video monitor for displaying Web pages, a keyboard 540 for inputting text, and a pointing device 550, such as a mouse, for selecting positions on the display. The customer computer system further includes transient and/or persistent storage 560 containing a Web browser program 561 for displaying and interacting with Web pages, and a cookie file 562 containing information stored on the customer computer system by Web servers and/or the network.

Figure 6 is a high-level block diagram of a typical network service center computer system. The network service center computer system 340 has one or more CPUs 610, a network connection 620, and a computer readable media drive 630. The network service center computer system further includes transient and/or persistent storage 640 containing network service center software 641 for managing the record keeping associated with purchase transactions, an HTTP server 642 for serving Web pages, a customer database 643 for maintaining information on each customer of the network, a merchant database 644 for maintaining information about each merchant, and a transaction database 645 for maintaining information about transactions entered into between customers and merchants. While these tables, described in greater detail below, are each conceptually single tables, they may each be implemented using more than one table, or a combination of data structures of different types.

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To more clearly illustrate the operation of the network, its operation is described herein in conjunction with an example of its use by a customer. Figure 7 is a screen shot diagram showing a Web page displayed by a merchant. The Web page 700 includes information about the merchant, including information about products 711-714 that are offered for sale by the merchant. The information about each item includes a link that may be activated by the customer. For example, link 711 may be activated by the customer to purchase the item "20 Questions on XML." When the customer does so, the customer initiates the purchasing process.

Figure 8 is a flow diagram showing the steps preferably performed by the network as part of the purchasing process. These steps are preferably performed by network service center software executing on the network service center computer system and a transaction engine executing on the merchant computer system in conjunction with the Web browser executing on a customer computer system. Those skilled in the art will recognize, however, that these steps, as well as the other steps shown in flow diagrams herein, may also be distributed to other computer programs executing on other computer systems in accordance with alternate network configurations.

In step 801, the network determines whether a valid session cookie is stored on the customer computer system in its cookie file 562. If so, this indicates that the customer computer system is being used by a registered customer who has already signed on to the network, and the network continues in step 807. Otherwise, no registered user is currently signed onto the network from the customer computer system, and the network continues in step 802. Step 801 is preferably performed by examining time stamps in any network session cookies previously stored on the customer computer system by the network. These time stamps reflect the last time the customer signed on and the last time the customer made a purchase. The amount of time elapsed between these times stored in the cookie and the present time indicates whether each session cookie is presently valid. For example, the network may determine that a cookie indicating that the customer signed on less than six hours

ago and completed his or her last purchase less than two hours ago is still signed onto the network, and that a network session cookie bearing those time stamps is valid.

In step 802, if the customer is already registered with the network, the network permits the customer to sign on, and continues in step 803. If not, the network allows the user to register with the network, and continues in step 804. In step 803, the network authenticates the customer based on information provided by the customer as part of a sign on process. Figure 9 is a flow diagram showing the steps preferably performed by the network in order to authenticate a customer. In step 901, the network collects from the customer the customer's member identifier and password. Figure 10 is a screenshot diagram showing the sign on dialog box preferably displayed by the network to collect the member identifier and password. The sign on dialog box 1000 includes a member identifier field 1001 and a password field 1002, into which the customer may type his or her member identifier and password, respectively. The user then selects the sign on button 1003 to submit this information.

In step 902, the network also reads a customer cookie stored on the customer computer system for the collected member identifier. In step 903, the network extracts from the read customer cookie a unique identifier for the user stored in the customer cookie by the network. In one preferred embodiment, this unique identifier is the user's email address, or other information specific to the domain of the user. In step 904, if the combination of the collected user name and the extracted unique identifier correspond to a customer entry in the customer database, then the network continues in step 905, else authentication fails. In step 905, if the collected password is the correct password for that customer entry in the customer database, then authentication succeeds, else authentication fails.

Returning to Figure 8, in step 804, the customer has elected to register with the network by activating the register link 1004 in the sign on dialog box 1000. Figure 11 is a flow diagram showing the steps preferably performed by the network in order to register the customer with the network. In step 1101, the network collects personal information about the customer, as well as payment information. The

payment information preferably specifies a credit card account, but may alternatively specify any method of payment selected by the operator of the network. The collection process is shown in Figure 12. Figure 12 is a screenshot diagram showing a registration dialog 1200, into which the user enters personal and payment information. The user preferably fills in a first name field 1201, a last name field 1202, a postal code field 1203, an email address field 1204, a credit card type field 1205, a credit card number field 1206, a credit card expiration date field 1207, a member ID field 1208, password fields 1209, and a shared secret field 1210. It should be noted that the member ID 1208 may be any member identifier selected by the user, and does not need to be unique across the network. After completing fields 1200 through 1210, the user activates the register button 1211 to submit the information.

Returning to Figure 11, in step 1102, the network verifies that the entered personal information is formatted correctly. For example, the network verifies that the zip code in the customer's address has the correct number of digits. If personal information formatting verification fails, the network preferably requests that the user input new, correctly-formatted personal information and repeats step 1102. In step 1103, the network verifies the entered payment information. In doing so, the network preferably determines whether the credit card number is valid, and whether the personal information collected matches the credit card number. As part of determining whether the credit card is valid and active, the network may further attempt to obtain authorization to charge a small amount to the credit card, to ensure that the credit card is active. The network may further utilize third party credit card verification or fraud detection services in performing step 1103. If verification of payment information fails, the network preferably requests that the user input new, valid payment information and repeats step 1103. In step 1104, the network creates an entry in the customer database for the customer containing the collected information. In step 1105, the network sends an email message to the customer announcing the customer's successful registration with the network. After step 1105, the steps conclude.

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Returning to Figure 8, after registering the customer, in step 805, the network stores on the customer system a customer cookie identifying the customer by user name and unique identifier (preferably email address). In step 806, the network stores on the customer computer system a network session cookie documenting customer authentication. The network session cookie preferably includes the date and time of authentication. In step 807, the network determines whether the item selected by the customer has already been purchased by the customer. If so, the network continues in step 811 to provide the purchased item without charging the customer again. Otherwise, the network continues in step 808. In step 808, the network confirms the purchase with the customer. Figure 13 is a screenshot diagram showing a confirmation dialog preferably displayed by the network in step 808. The confirmation dialog 1300 contains information 1301 about the purchase, including an identification of the item, the purchase amount, and the duration or expiration of the purchase. In order to complete the purchase, the customer activates the continue button 1302.

Returning to Figure 8, in step 809, the network generates a purchase transaction, which it adds to its transaction database 645. In step 810, the network updates the network session cookie stored on the customer computer system to reflect the present time as the time of the last purchase. In step 811, the network provides to the user the purchased item. After step 811, these steps conclude.

Figure 14 is a screenshot diagram showing provision of a purchased item. The Web page 1400 is the purchased item selected by activating link 711 on the merchant Web page, "20 Questions on XML." If the user leaves this Web page to continue browsing or turns off the customer computer system, the customer can revisit this purchased item during the duration of the purchase by again selecting its link from the merchant Web page. In response, the network immediately provides the purchased item without further interaction by the customer once the user is authenticated by the network.

After the customer is authenticated, the customer may complete additional purchases on the same or different merchant Web pages without

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reauthenticating. Figure 15 is a screenshot diagram showing a Web page of a second merchant. The Web page 1500 lists items 1501-1526 available for purchase. The user may select link 1524 in order to select a market report item titled "Electrical Power Systems FY 98." After selection of this link, a confirmation dialog is immediately displayed without requiring the user to perform any authentication interactions.

Figure 16 is a screenshot diagram showing the confirmation dialog displayed in response to the customer's activation of link 1524. Once the confirmation dialog box 1600 is displayed, the user need only select the continue button 1601 in order to complete the purchase of this additional item. After selecting this button, the "Electrical Power Systems FY 98" report is displayed. Figure 17 is a screenshot diagram showing the provision of the additional purchased item. Web page 1700 contains the purchased "Electrical Power Systems FY 98" item.

As a result of each purchase transaction, the transaction engine creates a transaction record documenting the transaction, which is stored by the transaction engine at the merchant site. Periodically, a polling agent within the network service center software polls the transaction engine at each merchant site to retrieve any transaction records generated on that merchant's site. The polling agent, upon retrieving these transactions, stores them each as a row in a transaction database maintained by the network. The transaction records are preferably aggregated by the network periodically into payment requests, which are requests to a payment processor to charge the customer's credit card or other form of payment. Figure 18 is a table diagram showing the transaction database maintained by the network. While the transaction table is shown for clarity as a single database table containing plain text, it will be appreciated by those skilled in the art that it may be advantageously implemented in a more heavily encoded and optimized form using conventional database techniques.

In the transaction table 1800, each row represents a transaction. Each row preferably contains data in at least six columns: a customer column 1801, a merchant column 1802, an item column 1803, an amount column 1804, an expiration

column 1805, and an outstanding column 1806. The customer column preferably contains the member ID of the customer that entered into the transaction. For example, row 1812 contains the member identifier "Joe User." The merchant column identifies the merchant with which the customer entered into the transaction. For example, row 1812 lists the merchant "Content Partner." The item column 1803 preferably identifies the purchased item. For example, in row 1812, the item is the "Twenty Questions on XML" item. The price column 1804 preferably contains the amount of the purchased item. For example, in row 1812, the price is "US$ 2.50". The expiration column 1805 preferably contains the time at which the purchase expires. For example, for row 1812, the purchase expires at 2:25 p.m. on November 3, 1998. Finally, the outstanding column 1812 indicates whether the customer has yet paid for the purchase. For example, in row 1812, the customer has not yet paid for the purchase, so the transaction is still outstanding.

Figure 19 is a flow diagram of the steps preferably performed by the network in order to aggregate the transaction records in the transaction database into payment requests sent to a payment processor. The transactions are preferably aggregated monthly on each customer's monthly billing anniversary, but may be aggregated on any other desired schedule. In steps 1901-1907, the network loops through each of a plurality of groups of customers. In a preferred embodiment, there is a separate group of customers for each day of the month, and the loop of steps 1901-1907 is iterated once per day. In steps 1902-1905, the network loops through each customer in the group. In step 1903, the network determines the sum of the outstanding transactions of the customer. For example, for customer "Joe User" the network would add the amounts of rows 1812 and 1813, "US$ 2.50" and "US$ 1.00", to determine the sum of US$ 3.50. In step 1904, if the sum is greater than a billing threshold, such as US$ 4, then the network continues in step 1905, else the network continues in step 1906. In step 1905, the network generates a payment request for the determined sum against the credit card, or other form of payment, of the customer. In a preferred embodiment, the generated payment request has two parts: an authorization request, and a settlement request. The authorization request requests

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the authority to charge the amount, while the settlement request requests actual payment of the amount. In step 1906, if additional customers remain for processing, the network loops to step 1902 to process the next customer in the group. In step 1907, the network transmits the payment requests generated in step 1905 to a payment processor in a batch. In step 1908, each day, the network loops back to step 1901 to process the next group of customers.

Generally, for each batch of payment requests transmitted to the payment processor, a payment report is received back from the payment processor indicating whether each of the payment requests was paid. Figure 20 is a flow diagram showing the steps preferably performed by the network in order to process a payment report. In step 2001, the network receives the payment report from the payment processor. In steps 2002-2007, the network loops through each payment indication in the payment report. Each payment indication generally corresponds to a different one of the payment requests included in the batch. In step 2003, if the payment indication indicates that the corresponding authorization was paid by the payment processor, then the network continues in step 2005, else the network continues in step 2004. In step 2004, the network, through inaction, permits the constituent transaction records to remain outstanding. The network may also take further steps (not shown) to immediately resubmit the payment requests, or to cancel the account of the customer. After step 2004, the network continues in step 2007. In step 2005, the network credits the accounts of the merchants of the constituent transactions in accordance with the business arrangement between the merchants and the operator of the network. For example, the merchant "Stat USA" may have an arrangement with the operator of the network in which the merchant receives ninety percent of the amount of each purchase. Thus, for transaction record 1813, the merchant "Stat USA" would be credited in the amount US$ 0.90. In step 2006, the network cancels the outstanding status of the constituent transaction records so that they will not be incorporated in any future payment requests. In step 1907, if additional payment indications remain in the payment report, the network loops back

to step 1902 to process the next payment indication. After step 2007, the steps conclude.

With respect to the steps shown in Figures 19 and 20 and discussed above, those skilled in the art will appreciate that, while these steps are directed primarily to forms of payment such as credit cards and check cards, these steps may be straightforwardly adapted to obtain payment from customers using different forms of payment.

In preferred embodiments, tasks relating to customer authentication and purchasing are allocated within the network as follows. Each item purchase link is preferably directed to a portion of the network called the transaction engine. A separate transaction engine is preferably located at each merchant site, so that, at any time that customers are able to access the merchant Web pages to initiate a purchase transaction, a version of the transaction engine is available to conduct the purchase transaction. The transaction engine reads and writes network session cookies. In order to do so, the transaction engines for all of the merchants are preferably registered within a single, central domain so that all of the transaction engines at all of the merchant sites may read and write the same cookies on the customer computer system. When an item purchase link is activated, the transaction engine checks for a valid network session cookie on the customer computer system, indicating that the customer has already been authenticated. If the transaction engine does not find a valid network session cookie, the transaction engine redirects processing to a customer information subsystem of the network. The customer information subsystem portion of the network performs authentication or registration for the customer, then instructs the transaction engine to confirm the transaction, generate a transaction record, write or refresh the network session cookie, and deliver the purchased item. To deliver the purchased item, in one embodiment, the transaction engine retrieves the data for the item from the merchant, and delivers the data for the item to the customer.

In another embodiment of the invention, in order to avoid the time and processing cost of relaying the data for the item through the transaction engine, rather

than itself retrieving the data for the item, the transaction engine sends a request to the merchant computer system, through the customer computer system, to transmit the data for the item directly to the user. The request includes a "ticket"—an encrypted token attesting to the legitimacy of the request. At the merchant computer system, an authorization subsystem decrypts and verifies the ticket, creates a merchant session cookie that is similar to the network session cookie and that attests to the purchase and the authentication of the customer, and transmits the data for the item to the customer computer system.

Locating authorization subsystems at merchant computer systems also enables the network to manage customer authentication for merchants in their own domains. When a customer attempts to access a restricted portion of a merchant's Web site that is in a domain other than the central domain of the network, the authorization subsystem on the merchant computer system for that merchant checks to see whether a valid merchant cookie for that merchant is present on the customer computer system. Such a merchant cookie, if it is present on the customer computer system, attests to the current authentication of the user by the merchant. If a valid merchant cookie for that merchant is present on the customer computer system, the authorization subsystem allows access to the restricted portion of the merchant's Web site. If not, the authorization subsystem contacts the transaction engine. If the transaction engine finds a valid network session cookie on the customer machine—that is, a cookie attesting to the authentication of the customer in the central domain—it instructs the authorization subsystem to write a merchant session cookie and permit access to the restricted portion in the merchant's domain.

In a manner similar to the purchase process, if the transaction engine does not find a network session cookie on the customer machine, the transaction engine redirects processing to the customer information subsystem of the network. The customer information subsystem portion of the network performs authentication or registration for the customer, then instructs the transaction engine to create a network session cookie to the customer computer system. The transaction engine further instructs the authorization subsystem to write a merchant session cookie and

permit access to the restricted portion. In this way, the network provides a common method for signing onto the Web sites of all of the merchants, even those with restricted portions outside of the central network domain. Further, a customer may visit restricted areas of several different merchants, and is only required to sign on once.

In addition to some or all of the foregoing features, the network additionally preferably provides customers with centralized, automated services for account management, product refunds, subscription management, and multiple purchasing accounts linked to the same payment account.

Figures 21-25 illustrate the automated product refund service preferably provided by the network. Figure 21 is a screenshot diagram showing a sample customer statement. The statement 2100 contains entries, such as entries 2110 and 2120, each containing information about an item purchased by the customer named "Joe User." For example, entry 2120 in the statement contains information about the "Electrical Power Systems FX 98" report purchased from "Stat USA." The statement further includes the current balance 2130 for this account.

Each entry includes a link for displaying additional detail about the purchased item. For example, entry 2120 includes link 2121, which the user may activate to display additional information about the Stat USA report. Figure 22 is a screenshot diagram showing a sample item information page. The item information page 2200 includes information 2210 about the item. This information includes a link 2211 that can be activated to access the purchased item. The item information page also includes a button 2220 that can be activated to request a refund for the item. A customer may wish to request a refund, for example, if the item was ordered by mistake, if the item does not conform to the customer's expectations, or if the item could not be properly downloaded.

Figure 23 is a screenshot diagram showing a sample refund request. The refund request 2300 is displayed in response to the customer's activation of button 2340. The refund request contains information 2310 about the item for which a refund is sought, a listbox 2320 for specifying a reason for the refund request, and a

field 2330 for entering a further explanation of the circumstances surrounding the request for refund. The refund request further contains a button 2340 that can be activated to submit the refund request. Figure 24 is a screenshot diagram showing a sample confirmation screen confirming a refund request. The confirmation screen 2400 is preferably displayed in response to the activation of button 2340.

After the refund request is submitted, the customer's statement is preferably updated to reflect the submission of the refund request. Figure 25 is a screenshot diagram showing a sample statement reflecting the submission of a refund request. The updated statement 2500 includes a line 2521 indicating that a refund has been requested for item 2520. Line 2521 further indicates that the price of item 2520, $1.00, is being deducted from the account balance while the refund request is being considered. As a result, the account balance 2530 is reduced to include only the price of item 2510.

In processing refund requests, the network preferably employs a maximum automatic refund threshold. If a refund request is directed to an item having a price that is less than the maximum automatic refund threshold, the network preferably automatically grants the refund request. On the other hand, the network applies a more rigorous evaluation process to refund requests that are directed to items having prices greater than the maximum automatic refund threshold. The network preferably forwards such refund requests to a human customer service representative. This use of a maximum automatic refund threshold reflects a recognition that evaluation by a human customer service representative may incur a significant cost that, in many cases, exceeds the cost of granting the refund. In a preferred embodiment, the maximum automatic refund threshold is set at $10.00. As a result, a customer may conveniently complete the submission of a refund request without interacting directly with a human customer service representative. Further, in most cases, the network relieves its operator of any need to expend customer service representative time to process refund requests.

Figures 26-27 illustrate the automated, centralized subscription management service preferably provided by the network. Figure 26 is a screenshot

diagram showing a sample subscription management page. The subscription management page 2600 contains entries, such as entries 2610 and 2620, each containing information about a subscription purchased by the customer named "Joe User." For example, entry 2610 in the subscription management page contains information about a subscription to the "Wall Street Journal." Each entry also includes an indication of the expiration date of the subscription, as well as an indication of whether the subscription will automatically renew when it expires.

Each entry includes a link for displaying information about or modifying the subscription. For example, entry 2610 includes link 2611, which the user may activate to display additional information about the Wall Street Journal subscription. Figure 27 is a screenshot diagram showing a sample subscription information page. The subscription information page 2700 includes information 2710 about the subscription. This information includes a link 2711 that can be activated to access the subscription. The item information page also includes buttons 2721-2723 for modifying the subscription. The user may activate button 2721 to immediately renew the subscription for another term. When button 2721 is activated, the network updates the subscription management and subscription information pages to extend the expiration date of the subscription by the length of a term, and notifies the transaction engine at the merchant site to update the status of the subscription. The user may activate button 2722 to specify that the subscription should automatically renew for another term when the present term expires. When button 2722 is activated, the network updates the subscription management and subscription information pages to indicate that the subscription will automatically renew, and notifies the transaction engine at the merchant site to update the status of the subscription. The user may activate button 2723 to cancel the subscription. When button 2722 is activated, the network preferably credits the customer's account for a pro-rated portion of the subscription price. The network further updates the subscription management page to remove the entry for this subscription, and notifies the transaction engine at the merchant site to update the status of the subscription.

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As a result, a customer may conveniently perform subscription management operations without interacting directly with a human customer service representative. Further, the network relieves its operator of any need to expend customer service representative time to process subscription management operations.

In order to facilitate purchasing by multiple customers who pay for purchases together, the network preferably provides a feature in which it associates multiple purchasing accounts with a single payment account. This feature enables a company to pay for and track the purchases of its employees, a parent to pay for and track the purchases of his or her children, or an individual to separate his or her business purchases from his or her personal purchases. In accordance with this feature, a first customer may register as described above, in order to obtain both a purchasing account for purchasing items, and a payment account for paying for those purchases. At a later time, the first customer may create additional purchasing accounts that are "associated" with the payment account, either for others, or for himself or herself. Any purchases made with an additional purchasing account are consumed using the additional purchasing account, and are billed to the associated payment account, using the payment information associated with this payment account.

Figures 28-30 illustrate the multiple purchasing accounts feature preferably provided by the network. In a preferred embodiment, an additional purchasing account can be added to an existing payment account by a customer signed on to an existing purchasing account associated with the payment account. Figure 28 is a screenshot diagram showing a sample registration page for registering an additional purchasing account for an existing payment account. In the example, the registration page shown is used by the customer named "Joe User" to add an additional purchasing account for "Jean User" to his existing payment account. The registration page contains fields 2810 into which the customer enters information about the customer that will use the additional purchasing account, including the email address of this customer, and the user name and password to be used with the

additional purchasing account. After entering this information, the customer activates button 2820 to register the additional purchasing account.

After the additional purchasing account has been registered, it may be used by Jean User to purchase items. Figure 29 is a screenshot diagram showing a sample customer statement showing purchases made with the additional purchasing account. The customer statement 2900 contains entries 2910 and 2920 for items purchased by Jean User using her purchasing account. The customer statement further contains a total 2930 of the items that Jean User has purchased. It should be noted that, in the preferred embodiment shown, items purchased using other purchasing accounts associated with the same payment account (*e.g.*, those purchased by Joe User using his purchase account, shown in Figure 21) are not shown on the customer statement or included in the total.

On the other hand, customers signed on to the payment account (or to the first purchasing account, which is preferably more tightly coupled to the payment account than are additional purchasing accounts) may display the purchases made using other customer accounts associated with the same payment account. Figure 30 is a screenshot diagram showing a sample customer statement showing purchases made with multiple purchasing accounts that are each associated with the same payment account. The customer statement 3000 includes both entries 3010 and 3020 describing purchases made by Joe User using his purchasing account, and entries 3030 and 3040 describing purchases made by Jean User using her purchasing account. Additionally, the customer statement shows a total 3050 that reflects the purchases made by both Joe User and Jean User. It can be seen that this statement permits a user of a payment account to review the purchases made using all of the purchasing accounts associated with the payment account, and to determine the amount that will requested in the next payment request generated by the network for the payment account.

While this invention has been shown and described with reference to preferred embodiments, it will be understood by those skilled in the art that various changes or modifications in form and detail may be made without departing from the

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scope of the invention. For example, instead of operating in conjunction with multiple merchants, the network may operate in conjunction with a single merchant. Further, the functionalities provided by the network may be allocated differently across the described computer systems, or may be provided by a different combination of computer systems than described. Further, these computer systems may be connected by a combination of different networks, instead of by a single network such as the Internet. The network may further be reconfigured to more optimally perform in particular business environments. Additionally, the network may be used to sell goods and services other than digital goods, including physical goods. Also, the network may preferably accept payment information and generate payment requests for any form of payment, or any combination of different forms of payment.

CLAIMS

We claim:

1. A method in a computer network for managing purchase transactions for the Web sites of a plurality of merchants using a transaction network, comprising the steps of:

for each of the plurality of merchant Web sites, under the control of the merchant Web site:

displaying items available for purchase, each item having a price;

receiving user input from users using Web clients selecting items for purchase; and

for each item selection, forwarding a purchase request to the transaction network indicating the price of the selected item;

under the control of the transaction network:

receiving transaction network purchase requests forwarded from the plurality of merchant Web sites;

for each received purchase request:

discerning the identity of the user; and

generating a pending transaction record indicating the identity of the user, the price of the selected item, and the identity of the forwarding Web site;

periodically determining, for each user whose identity is indicated by a pending transaction record, the sum of the prices of the pending transaction records indicating the identity of the user;

where the determined sum for a user exceeds a billing threshold, submitting to a payment processor a request for settlement for the determined sum against an account of the user;

receiving settlement indications from the payment processor each indicating payment of an identified submitted a request for settlement;

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for each received settlement indication, for each transaction record whose price is included in the sum of the billing transaction identified by the received settlement indication:

crediting an account of the merchant identified by the transaction record; and

removing the pending status of the transaction record.

2. A method in one or more computer systems for procuring payment for purchase transactions each originating with a particular user and vendor, comprising the steps of:

receiving purchase requests each originating at one of a plurality of vendor Web sites, each purchase request indicating a purchase price;

for each received purchase request:

discerning the identity of a user with which the purchase request originated; and

storing a pending transaction record indicating the identity of the user, the purchase price, and the identity of the vendor at whose Web site the purchase request originated;

periodically determining, for each user whose identity is indicated by a pending transaction record, the sum of the prices of the pending transaction records indicating the identity of the user;

where the determined sum for a user exceeds a billing threshold, submitting to a payment processor a billing transaction for the determined sum against an account of the user;

receiving settlement indications from the payment processor each indicating payment of an identified submitted billing transaction;

for each received settlement indication, for each transaction record whose price is included in the sum of the billing transaction identified by the received settlement indication:

crediting an account of the vendor identified by the transaction record; and

removing the pending status of the transaction record.

3. One or more computer memories collectively containing a data structure for purchasing items from different vendors, the data structure comprising:

a first Web page, under the control of a first vendor, containing information describing a first item and a first link to a purchasing system not under the control of the first vendor, the first link activatable by users to purchase the first item;

a second Web page, under the control of a second vendor distinct from the first vendor, containing information describing a second item and a second link to the purchasing system, the purchasing system also not under the control of the second vendor, the second link activatable by users to purchase the second item;

instructions stored in a purchasing system, the instructions responding to the activation of the first link by:

identifying the user activating the first link;

establishing an account for the identified user if one has not yet been established;

causing the purchase of the first item to be posted to the account of the identified user; and

providing the first item to the identified user,

the instructions responding to the activation of the second link by:

identifying the user activating the second link;

establishing an account for the identified user if one has not yet been established;

causing the purchase of the second item to be posted to the account of the identified user; and

providing the second item to the identified user.

4. The computer memories of claim 3 wherein the instructions stored on the purchasing system are provided in an active server object.

5. A method in a computer system for generating payment requests incorporating multiple purchase transactions, comprising the steps of:

receiving purchase transaction indications, each purchase transaction indication indicating an amount and identifying one of a plurality of customers;

for each customer:

periodically determining the sum of the amounts of the received purchase transaction indications identifying the customer that have not been incorporated in a payment request; and

when the determined sum exceeds a billing threshold, generating a new payment request for the customer in the amount of the sum that incorporates the received purchase transaction indications identifying the customer that have not been incorporated in a payment request.

6. The method of claim 5 wherein the receiving step receives purchase transaction indications from a number of different vendors often whom the customers have made purchases.

7. The method of claim 6, further comprising the steps of:

for each vendor, collecting transaction indications indicating transactions entered into with the vendor; and

retrieving the collected transaction indications from each vendor.

8. The method of claim 5 wherein the generating step generates settlement requests, and wherein the method further comprises the step of transmitting generated settlement requests to a payment processor for settlement.

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9. A computer-readable medium whose contents cause a computer system to generate billing transactions incorporating multiple purchase transactions by performing the steps of:

receiving purchase transaction indications, each purchase transaction indication indicating an amount and identifying one of a plurality of customers; and

for each customer:

periodically determining the sum of the amounts of the received purchase transaction indications identifying the customer that have not been incorporated in a billing transaction; and

when the determined sum exceeds a billing threshold, generating a new billing transaction for the customer in the amount of the sum that incorporates the received purchase transaction indications identifying the customer that have not been incorporated in a billing transaction.

10. The computer-readable medium of claim 9 wherein the receiving step receives purchase transaction indications from a number of different content providers with whom the customers have entered into purchase transactions.

11. A computer system for generating billing transactions incorporating multiple purchase transactions, comprising:

a receiver that receives purchase transaction indications, each purchase transaction indication indicating an amount and identifying one of a plurality of customers;

an adder that, for each customer, periodically determines the sum of the amounts of the received purchase transaction indications received by the receiver that identify the customer that have not been incorporated in a billing transaction; and

a billing transaction generator that, when the sum determined by the adder exceeds a billing threshold, generates a new billing transaction for the customer in

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the amount of the sum that incorporates the received purchase transaction indications identifying the customer that have not been incorporated in a billing transaction.

12. A method in a computer system for aggregating charge transactions entered into by a customer, the method comprising the steps of:

over time, receiving a stream of charge transactions entered into by the customer, each charge transaction having an amount;

identifying a time at which the sum of the amounts of the received charge transactions exceeds a threshold amount; and

submitting to a payment processor a payment request for the sum of the received charge transactions.

13. The method of claim 12 wherein one of the received charge transactions was entered into in conjunction with a third-party vendor, further comprising the steps of:

receiving from the payment processor, in response to the submitting step, a settlement indication indicating payment of the submitted payment request; and

in response to the step of receiving a settlement indication, crediting to the vendor a portion of the sum.

14. A computer-readable medium whose contents cause a computer system to process charge transactions entered into by a customer by performing the steps of:

receiving a stream of charge transactions entered into by the customer, each charge transaction having an amount;

identifying a time at which the sum of the amounts of the received charge transactions exceeds a threshold amount; and

submitting to a payment processor a settlement request for the sum of the received charge transactions.

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15. The computer-readable medium of claim 14 wherein one of the received charge transactions was entered into in conjunction with a third-party vendor, and wherein the contents of the computer-readable medium further cause the computer system to perform the steps of:

receiving from the payment processor, in response to the submitting step, a payment indication indicating payment of the submitted settlement request; and

in response to the receiving step, crediting to the vendor a portion of the sum.

16. A computer memory device storing a charge aggregation data structure for storing information about charge transactions directed to a particular form of payment, the form of payment having a minimum threshold for charges against the form of payment, the data structure comprising a plurality of records each representing a distinct charge transaction, each record indicating an amount for the transaction it represents, at least some of the records indicating amounts below the minimum threshold for the form of payment,

such that the data structure may be accessed to combine a plurality of the charge transactions into a single aggregate transaction having an amount corresponding to the combined amounts indicated by the records that is in excess of the minimum threshold, such that the aggregate transaction may be charged against the form of payment.

17. The computer memory device of claim 16 wherein the form of payment is a credit card.

18. The computer memory device of claim 16 wherein the form of payment is a debit card.

19. The computer memory device of claim 16 wherein the form of payment is an automated clearing house payment.

20. The computer memory device of claim 16 wherein the form of payment is an electronic funds transfer transaction.

21. The computer memory device of claim 16 wherein the form of the payment is a purchase order.

22. The computer memory device of claim 16 wherein each record of the data structures identifies one of a plurality of customers as having entered into the transaction represented by the record,
such that the data structure may be accessed to combine a plurality of the charge transactions into a plurality single aggregate transactions each corresponding to a single customer.

23. A memory device storing an aggregate charge data structure, the aggregate charge data structure being suitable for submission to a payment processor for payment, the data structure comprising:
a consumer identifier identifying a consumer that has charged a multiplicity of purchase transactions, each purchase transaction having an amount; and
an aggregate charged amount constituting the sum of the amounts of a constituent plurality of the multiplicity of purchase transactions charged by the consumer, at least one of the amounts of the constituent purchase transactions falling below a minimum threshold for submitting charges to a payment processor for payment, such that the data structure may be submitted to a payment processor for payment in place of the constituent purchase transactions.

24. The memory device of claim 23 wherein the data structure further comprises both a consumer identifier and aggregate charged amount for each of a plurality of additional consumers.

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25. A method in a computer system for identifying a user using a user computer system among a group of users, the method using a potentially non-unique member identifier, the method comprising the steps of:

(a) registering the user by:

(1) obtaining for the user a member identifier that is potentially not unique;

(2) after obtaining the solicited member identifier in step (a)(1), storing a unique identifier for the user on the user computer system in conjunction with the obtained member identifier; and

(b) identifying the user by:

(1) soliciting from the user the member identifier of the user;

(2) receiving from the user, in response to step (b)(1), the member identifier of the user;

(3) reading from the user computer system the unique identifier stored in conjunction with the member identifier received in step (b)(2);

(4) identifying the user using the unique identifier read in step (b)(3).

26. The method of claim 25 wherein a plurality of users having the same user computer system are registered by repeating steps (a)(1)-(a)(2) for each of the plurality of users.

27. The method of claim 25 wherein obtaining step (a)(1) comprises the steps of:

soliciting from the user a member identifier of the user; and

receiving from the user a member identifier of the user.

28. The method of claim 25 wherein the method is practiced on behalf of a first online service, and wherein obtaining step (a)(1) comprises the step of

obtaining for the user a member identifier used by the user to identify himself or herself to second online service distinct from the first online service.

29. The method of claim 28 wherein the step of obtaining for the user a member identifier used by the user to identify himself or herself to second online service obtains the member identifier from an operator of the second online service.

30. A method in one or more computer systems for purchasing products offered for sale by multiple vendors, comprising the steps of:

receiving a single, contiguous set of user interface interactions for establishing the identity of the user;

establishing the identity of the user based on the single, contiguous set of user interface interactions received in the receiving step;

purchasing an item offered for sale by a first vendor based on the user identity established in the establishing step; and

purchasing an item offered for sale by a second vendor distinct from the first vendor based on the user identity established in the establishing step.

31. The method of claim 30, further comprising the steps of:

in conjunction with the step of purchasing an item offered for sale by a first vendor, displaying a visual indication of the first vendor; and

in conjunction with the steps of purchasing an item offered for sale by a second vendor, displaying a visual indication of the second vendor.

32. The method of claim 30 wherein the receiving and establishing steps are performed as part of the step of purchasing an item offered for sale by the first vendor.

33. The method of claim 30 wherein the second vendor has a computer system, and wherein the establishing step includes the step of storing a central

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state signifying the establishment of the identity of the user, and wherein the step of purchasing an item offered for sale by the second vendor include the steps of:

checking the stored state;

in response to checking the stored state, sending an encoded ticket to the second computer system;

under the control of the second computer system:

decoding the encoded ticket;

validating the decoded ticket; and

performing the step of purchasing an item offered for sale by the second vendor in response to the validating step.

34. The method of claim 30 wherein the establishing step includes the step of storing a central state signifying the establishment of the identity of the user, and wherein the step of purchasing an item offered for sale by a second vendor include the steps of:

checking the stored central state; and

performing the step of purchasing an item offered for sale by a second vendor in response to the checking step.

35. A method in one or more computer systems for accessing multiple access-restricted Web sites, comprising the steps of:

receiving a single, contiguous set of user interface interactions for establishing the identity of the user;

establishing the identity of the user based on the single, contiguous set of user interface interactions received in the receiving step;

granting access to a first access-restricted Web site based on the user identity established in the establishing step; and

granting access to a second access-restricted Web site distinct from the second access-restricted Web site based on the user identity established in the establishing step.

36. The method of claim 35, wherein the second access-restricted Web site is served by a second computer system, and wherein the establishing step includes the step of storing a state signifying the establishment of the identity of the user, and wherein the step of granting access to the second access-restricted Web site include the steps of:

checking the stored state;

in response to checking the stored state, sending an encoded ticket to the second computer system;

under the control of the second computer system:

decoding the encoded ticket;

validating the decoded ticket; and

performing the step of granting access to the second access-restricted Web site in response to the validating step.

37. The method of claim 35 wherein the establishing step includes the step of storing a central state signifying the establishment of the identity of the user, and wherein the step of granting access to the second access-restricted Web site include the steps of:

checking the stored central state; and

performing the step of granting access to the second access-restricted Web site in response to the checking step.

38. A transaction network for vending digital content from a plurality of merchants comprising:

for each merchant, a transaction engine for conducting transactions with customers to purchase digital content and deliver purchased digital content; and

a network service center for collecting indicia of transactions entered into with each merchant and submitting payment requests for the collected transactions to a payment processor.

39. The transaction network of claim 38 wherein the network service center aggregates the transactions conducted with each customer, and wherein the payment requests are submitted for the aggregated transactions.

40. The transaction network of 39 wherein the network service center further receives from the payment processor indications of the payment of the submitted payment requests, and, for each received indication, credits the merchants with which the transactions aggregated into the request where conducted.

41. A method in one or more computer systems for providing to a customer automatic refund support for a purchase transaction, the method comprising:

generating for the customer a display soliciting information supporting a request for refund of the purchase transaction;

receiving from the customer, in response to the generated display, information supporting a request for refund; and

automatically generating a request for refund incorporating the received information,

such that the customer requests a refund of the purchase transaction without additional interaction.

42. The method of claim 41, further comprising the steps of:

generating for the customer a display containing indicators of each of a plurality of transactions entered into by the customer, at least two of the plurality of transaction being entered into with different merchants; and

receiving from the customer a selection of the transaction indication of a selected transaction,

and wherein the step of generating a display soliciting information to support a request for refund of a service transaction generates a display soliciting information to support a request for refund of the selected transaction.

BNSDOCID: <WO_____0033221A1_I_>

43. The method of claim 41 wherein the transaction has an amount, the method further comprising the steps of:

determining whether the amount of the transaction is less than a maximum threshold; and

if the amount of the transaction is less than the maximum threshold, automatically granting the requests for refund.

44. The method of claim 43, further comprising the step of, if the amount of the transaction is not less than the maximum threshold, determining whether to grant the request for refund based upon the information supporting the request for refund.

45. A method in one or more computer systems for enabling a subscriber to manage content subscriptions from a plurality of content sources, the method comprising:

displaying for the subscriber an indication of each of a plurality of content subscriptions entered into by the subscriber, at least two of the content subscriptions being with different content sources;

receiving from the subscriber a selection of the indication of a selected content subscription; and

on behalf of the subscriber, performing a subscription management operation with respect to the selected content subscription.

46. The method of claim 45 wherein the performing step cancels the selected content subscription.

47. The method of claim 45 wherein the performing step renews the selected content subscription.

48. A method in one or more computer systems for providing a plurality of purchasing accounts for purchasing digital content, all of the purchasing accounts of the plurality being associated with a single payment account, the method comprising:

storing payment information for the payment account that is usable to procure payment for digital content purchases made using any of the plurality of purchasing accounts;

storing for each of the purchasing accounts a different account identifier;

in response to each purchase request specifying content received in connection with the account identifier of one of the purchasing accounts:

completing a purchase of the specified content, and

providing the specified content; and

utilizing the payment information stored for the payment account to procure payment for digital content purchases completed using any of the plurality of purchasing accounts.

49. The method of claim 48, further comprising the steps of:

storing an account identifier for the payment account; and

in response to a request received in connection with the account identifier for the payment account, displaying information describing the purchases completed using any of the plurality of purchasing accounts.

50. The method of claim 48, further comprising the step of, in response to a request received in connection with the account identifier for a selected one of the purchasing accounts, displaying information describing the purchases made completed using only the selected purchasing account.

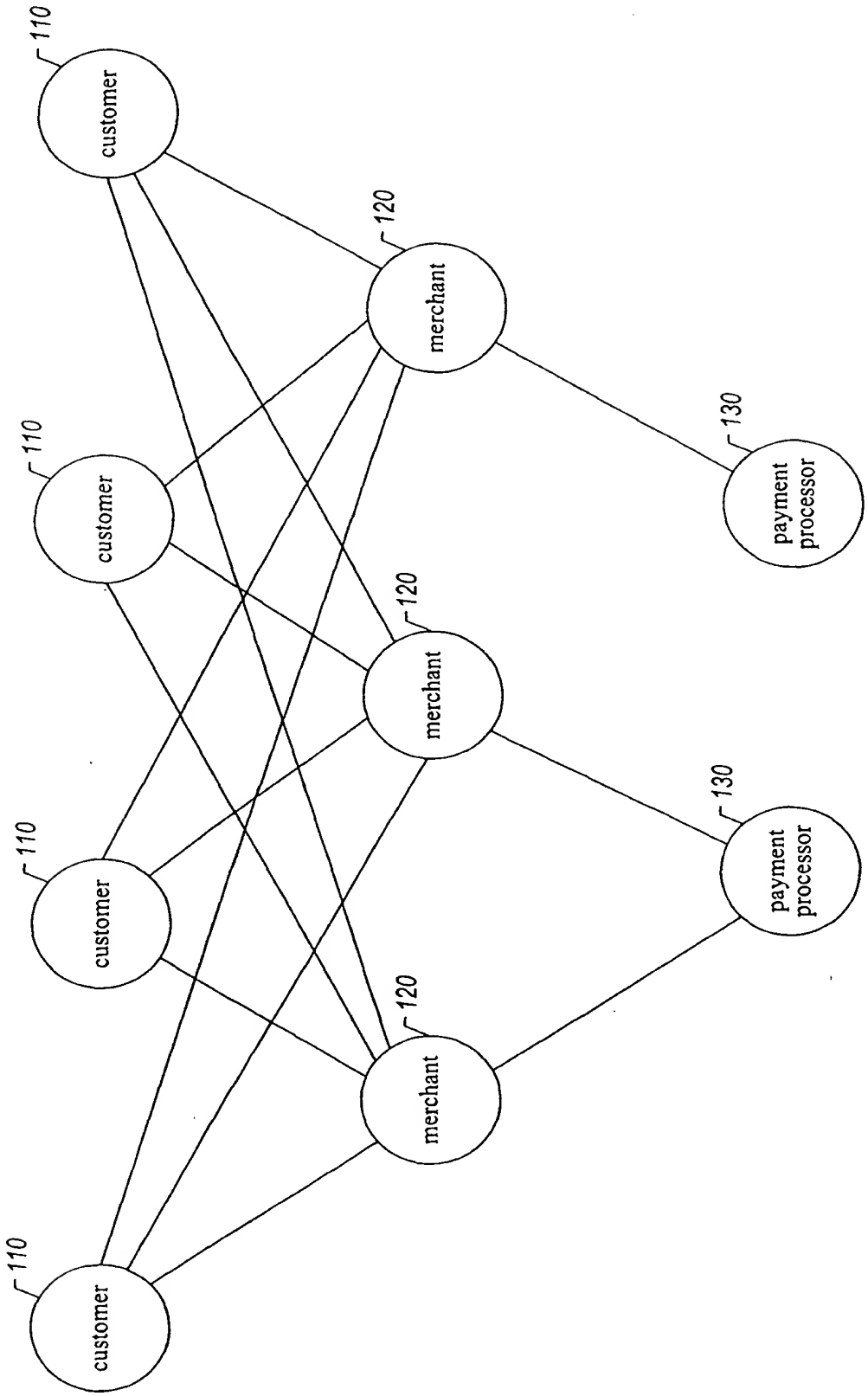

Fig. 1

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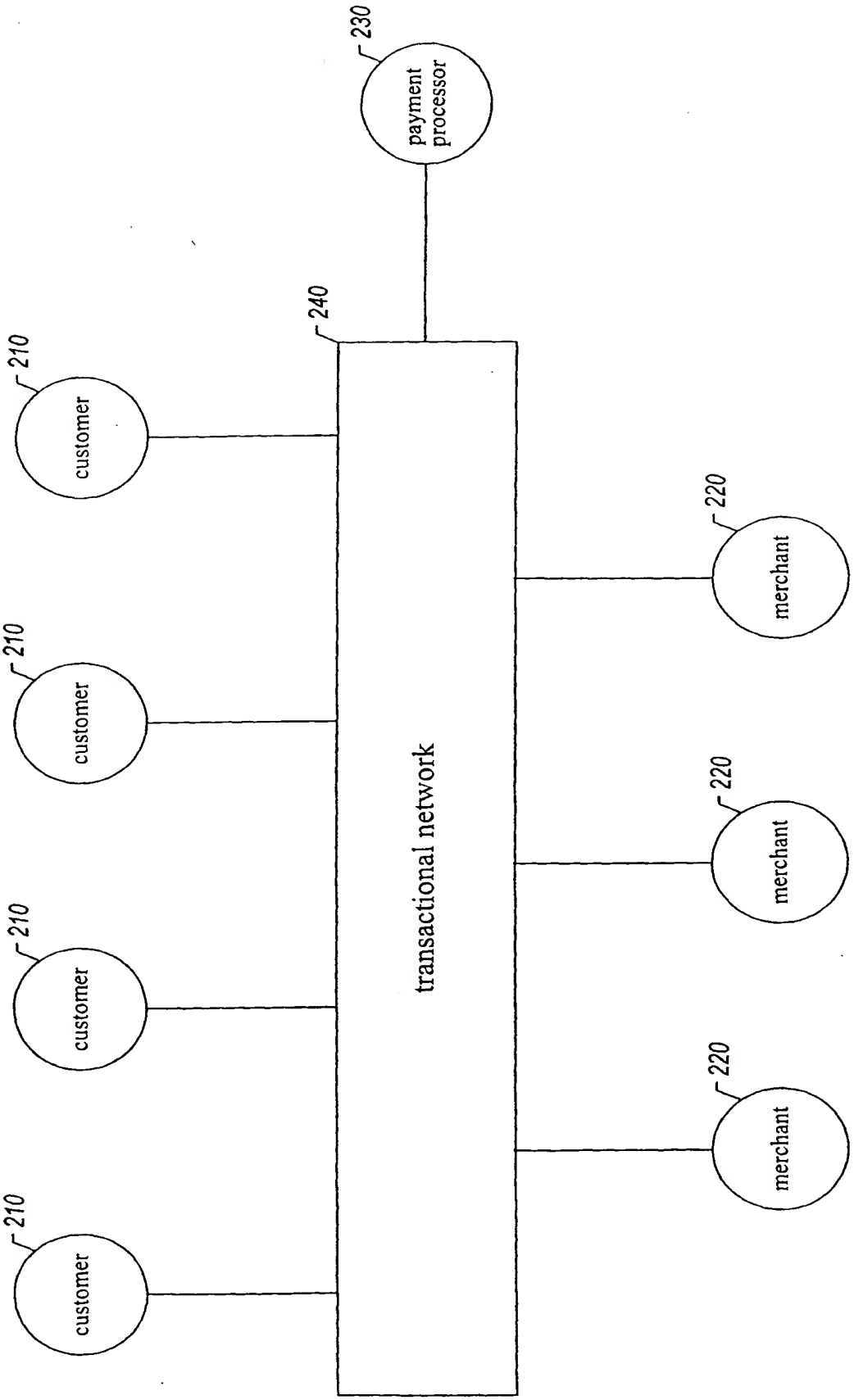
230
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transactional network
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customer
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customer
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customer
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merchant
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merchant
220
merchant

Fig. 2

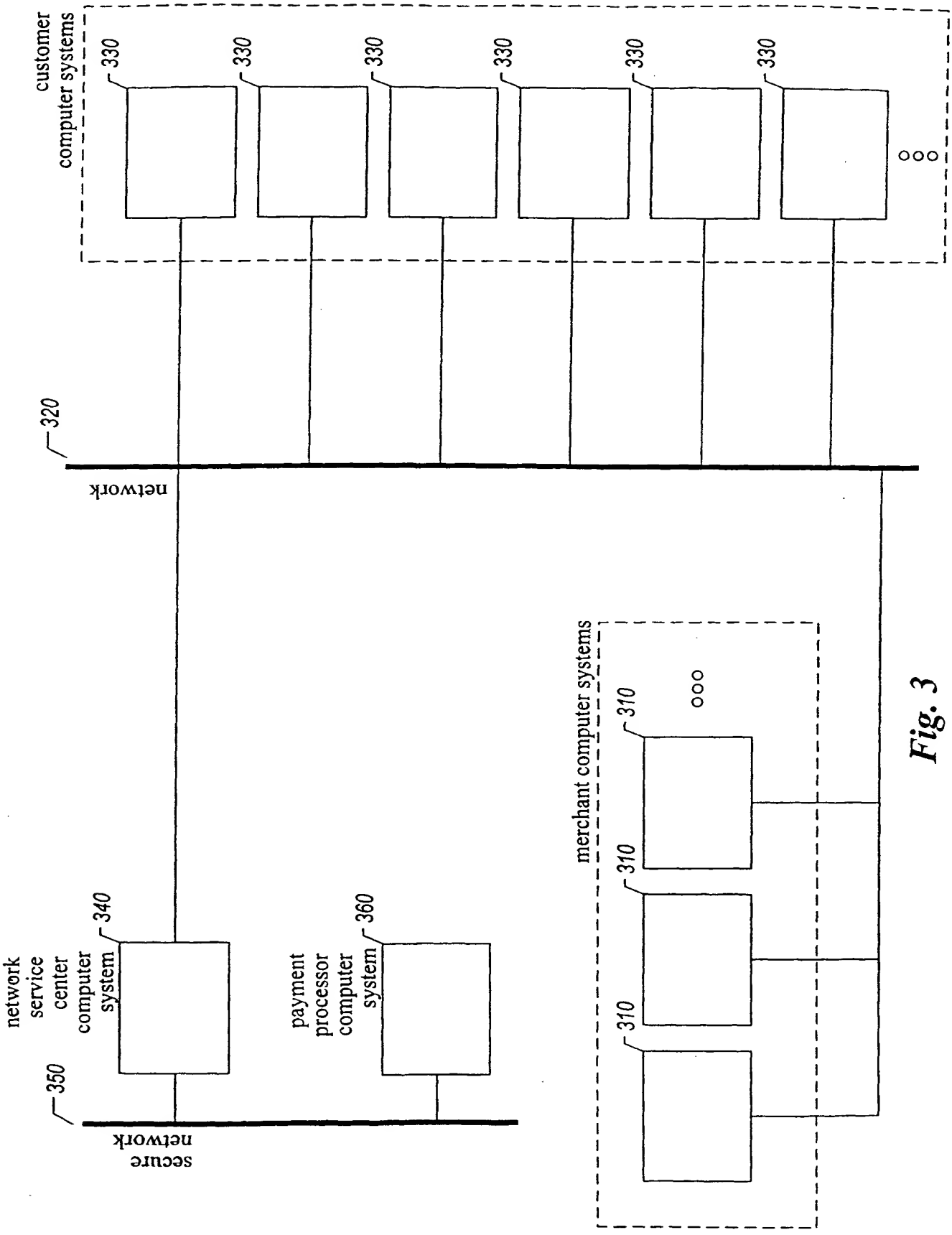

Fig. 3

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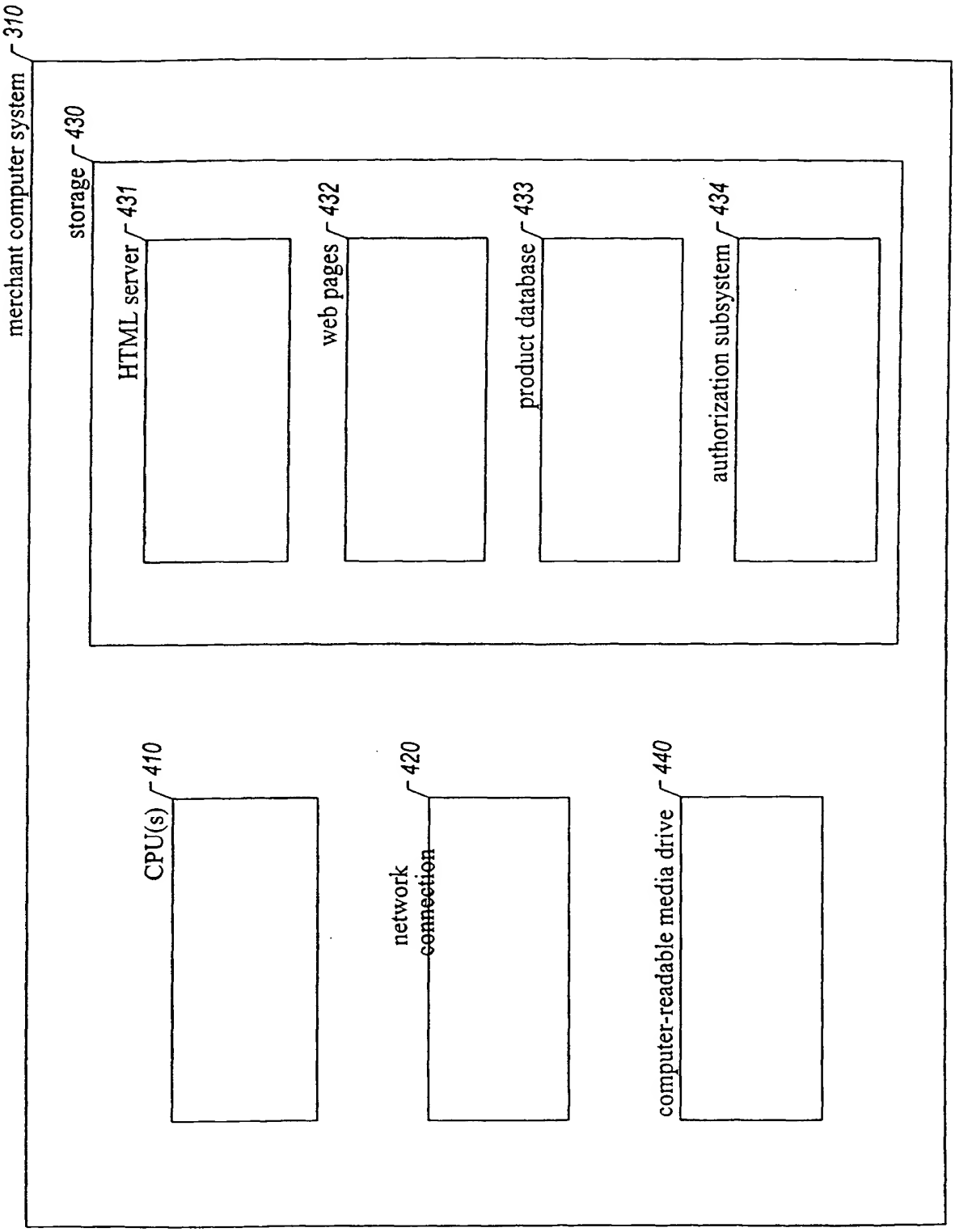
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storage
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HTML server
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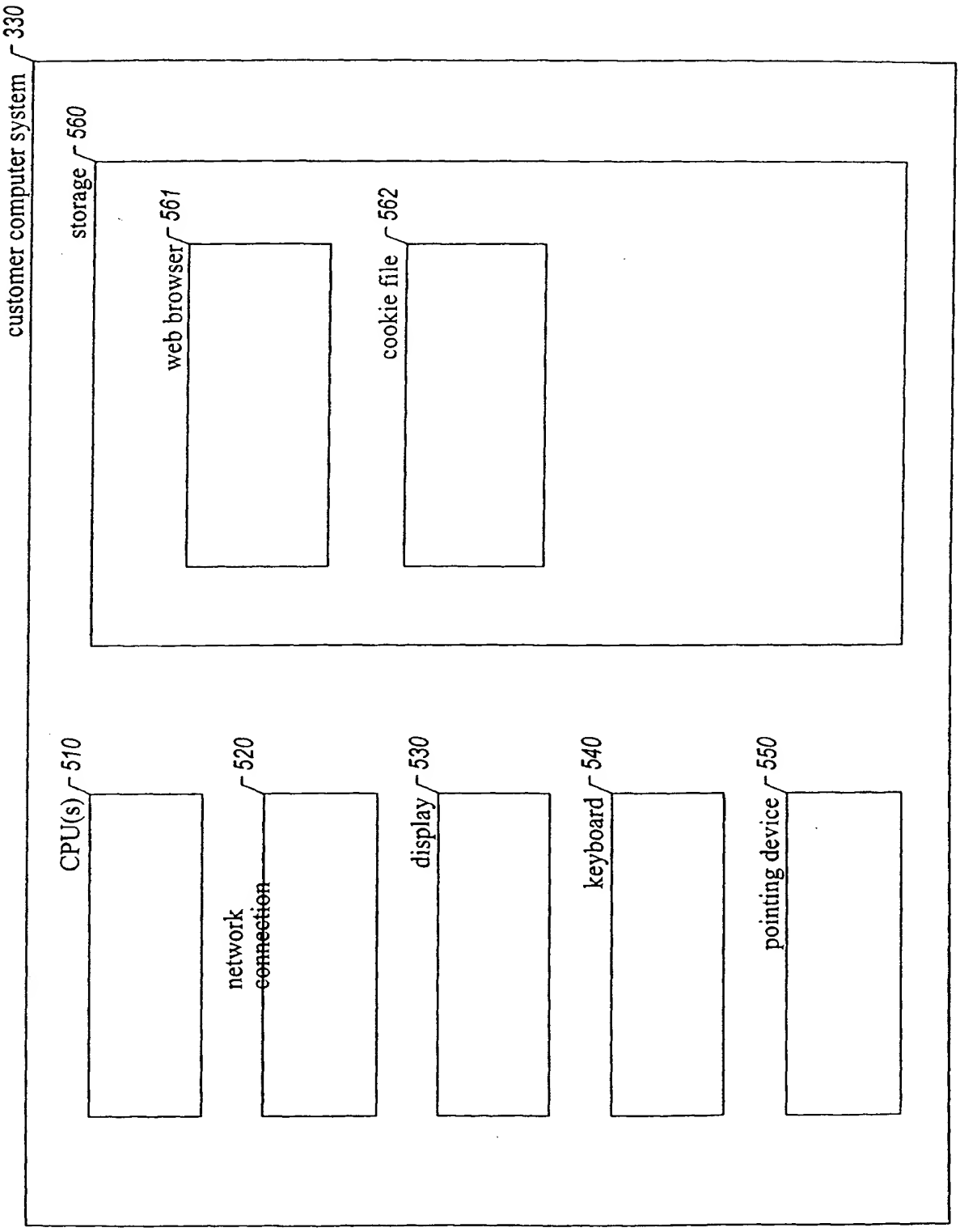
web pages
432
product database
433
authorization subsystem
434
CPU(s)
410
network connection
420
computer-readable media drive
440

Fig. 4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storage
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CPU(s)
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network connection
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display
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keyboard
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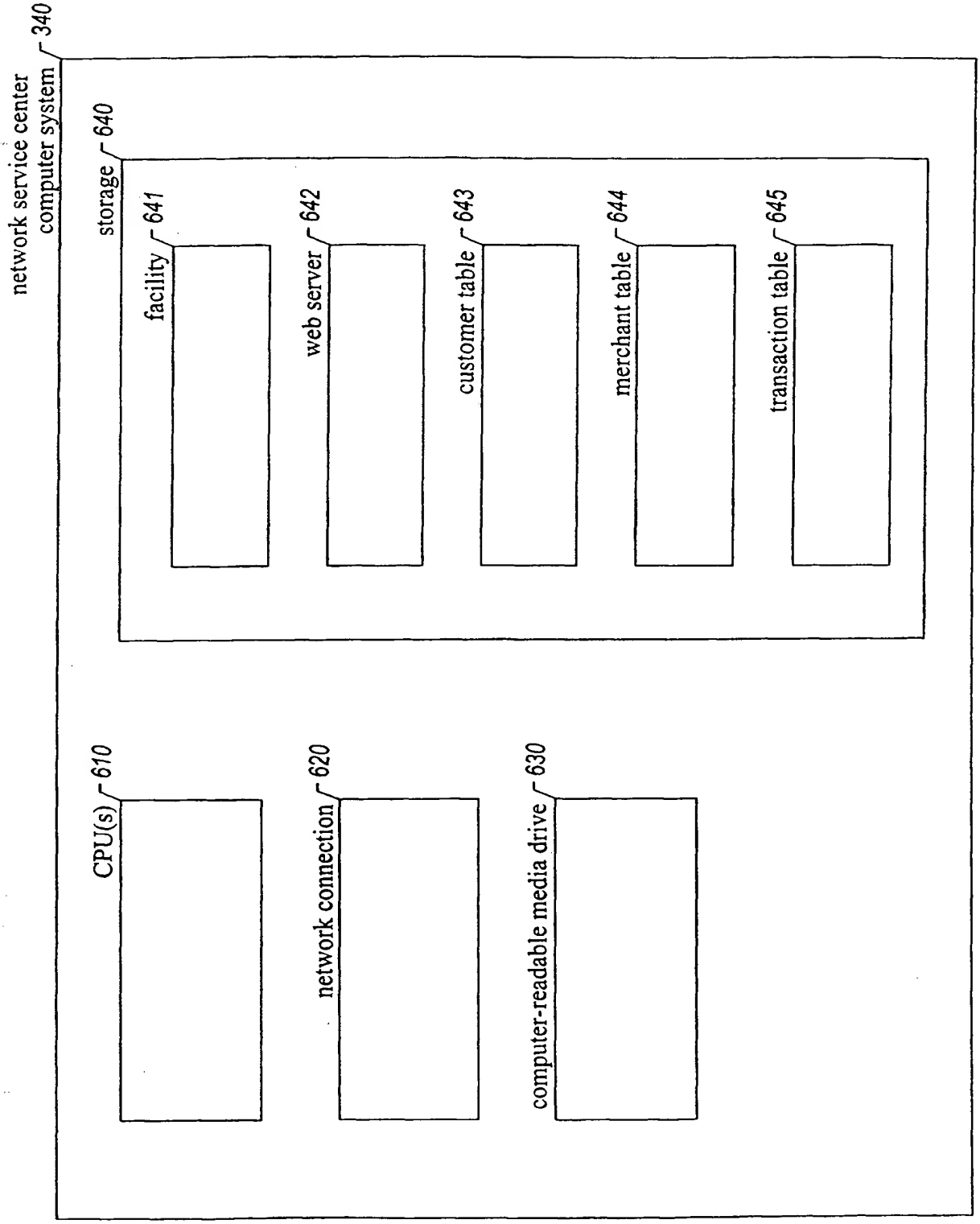
pointing device
550

Fig. 5



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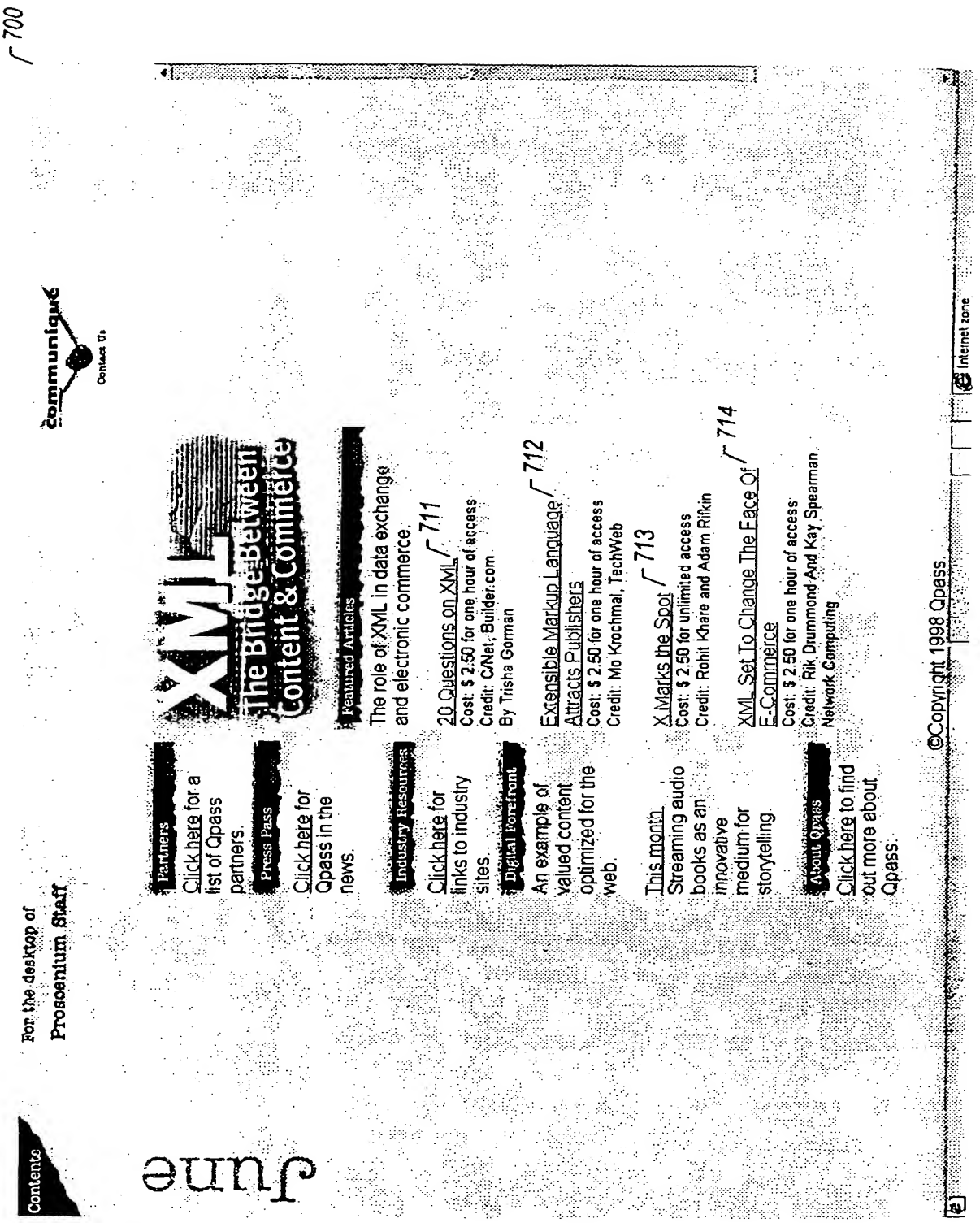

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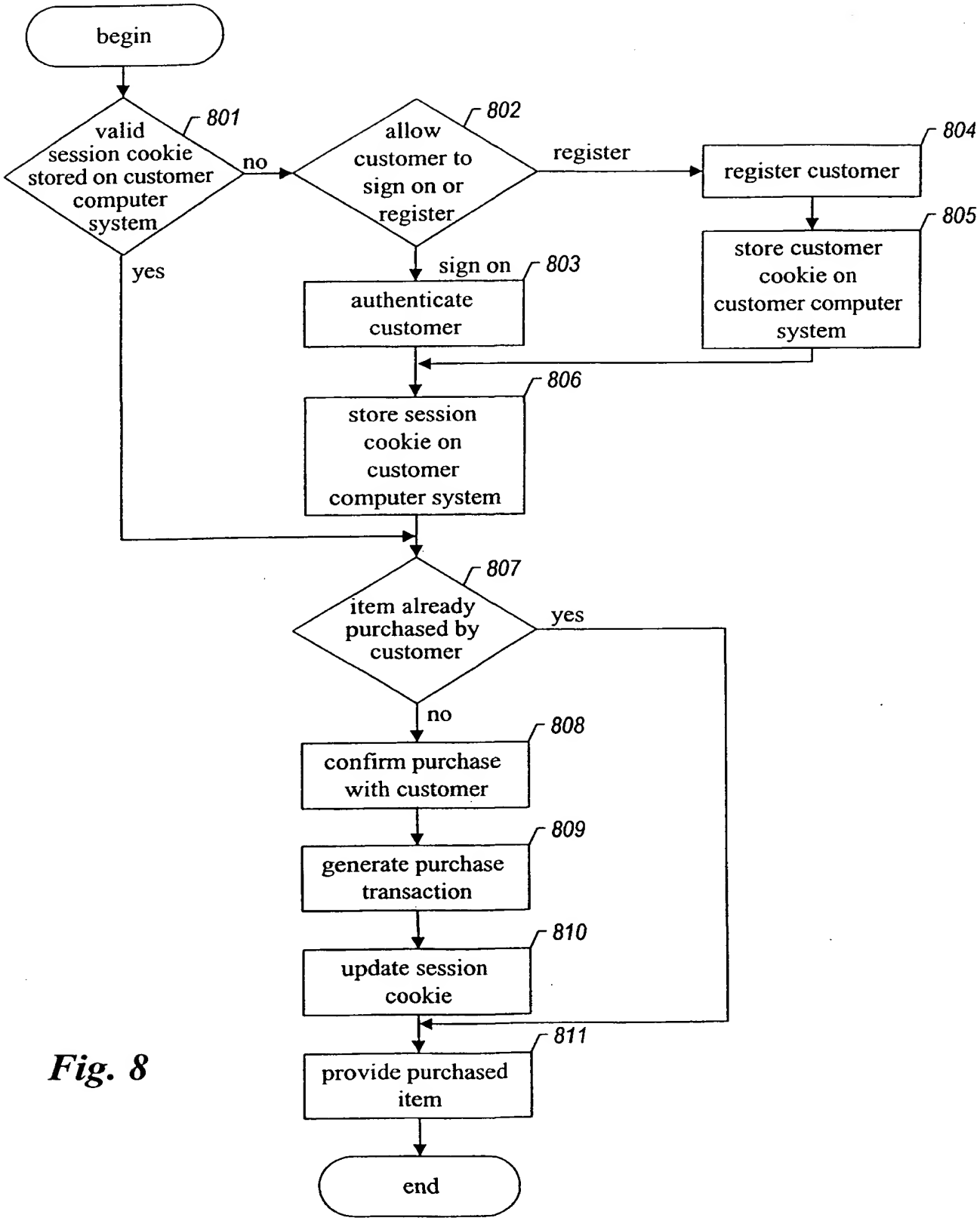

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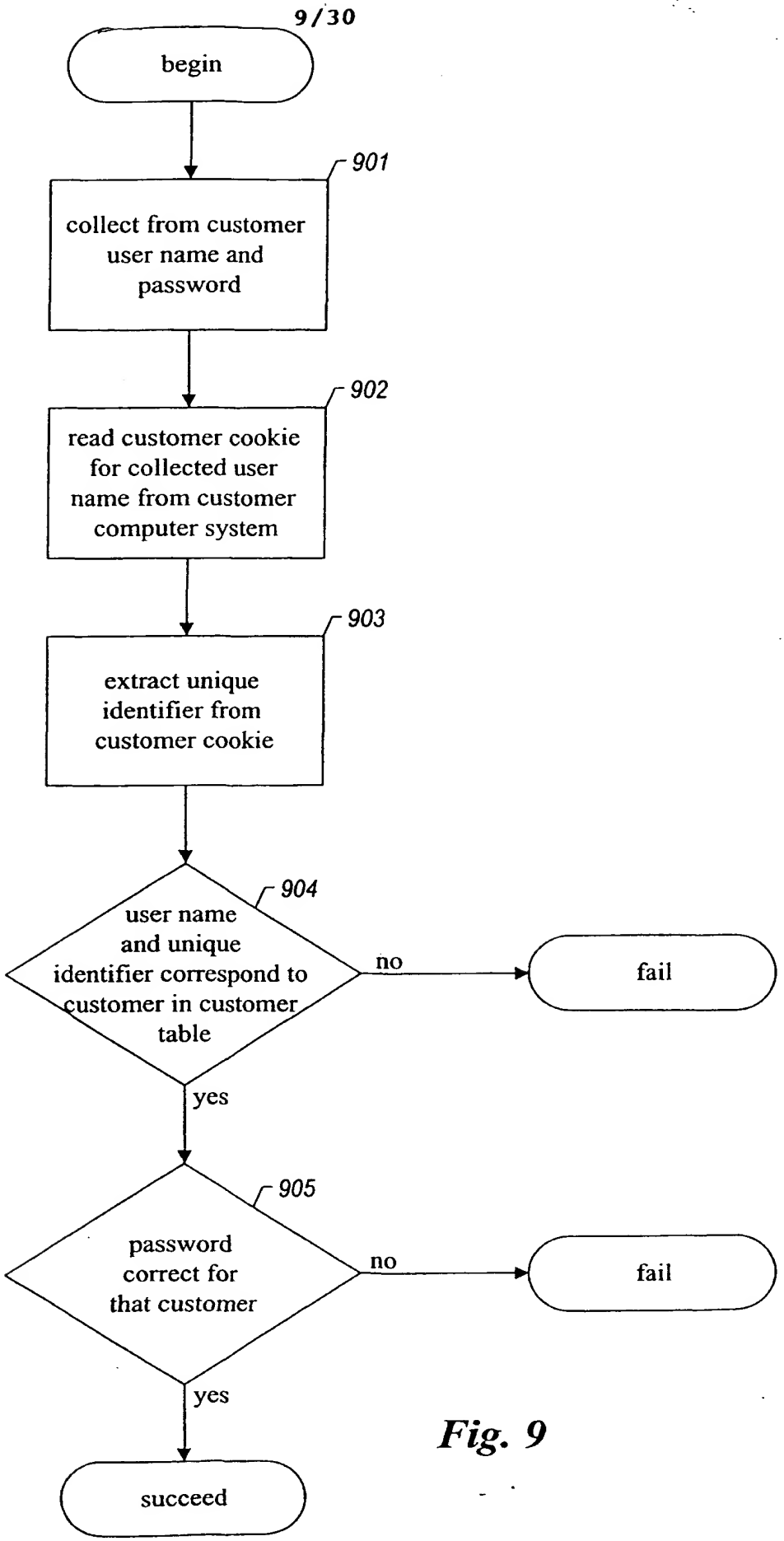

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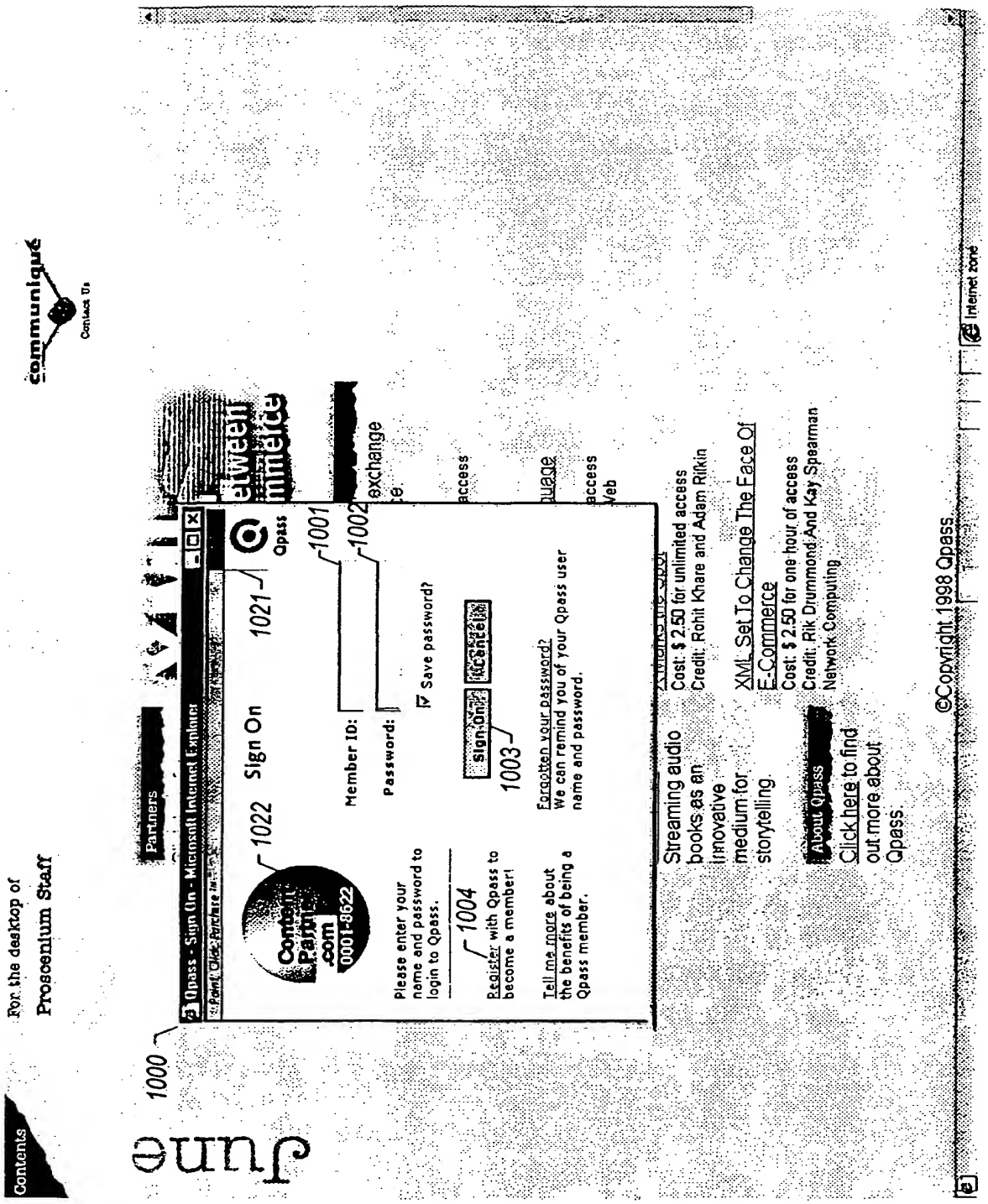

Fig. 10

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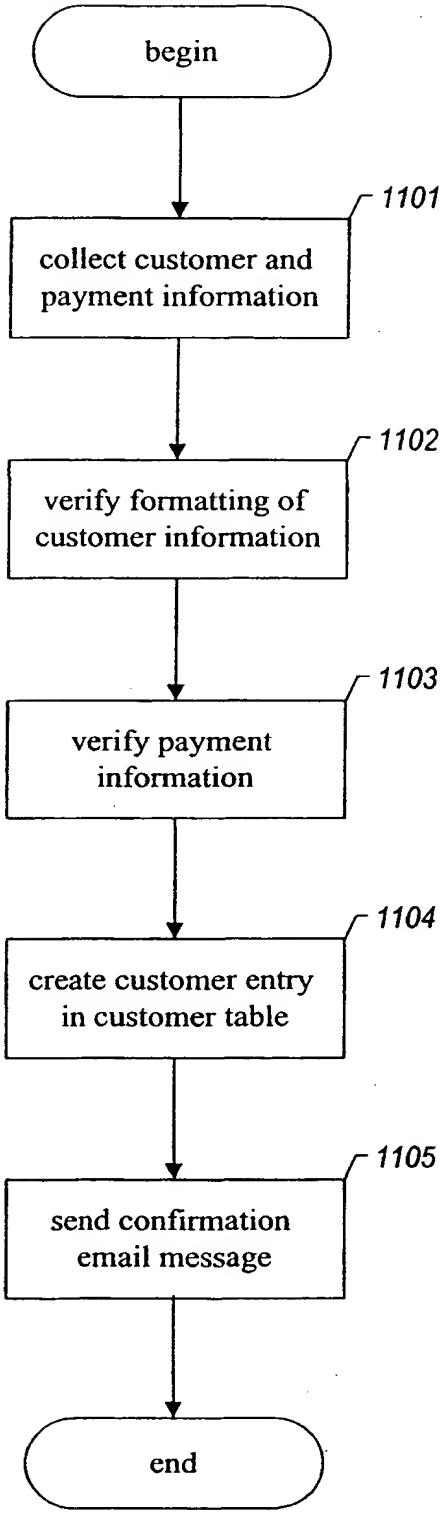

Fig. 11

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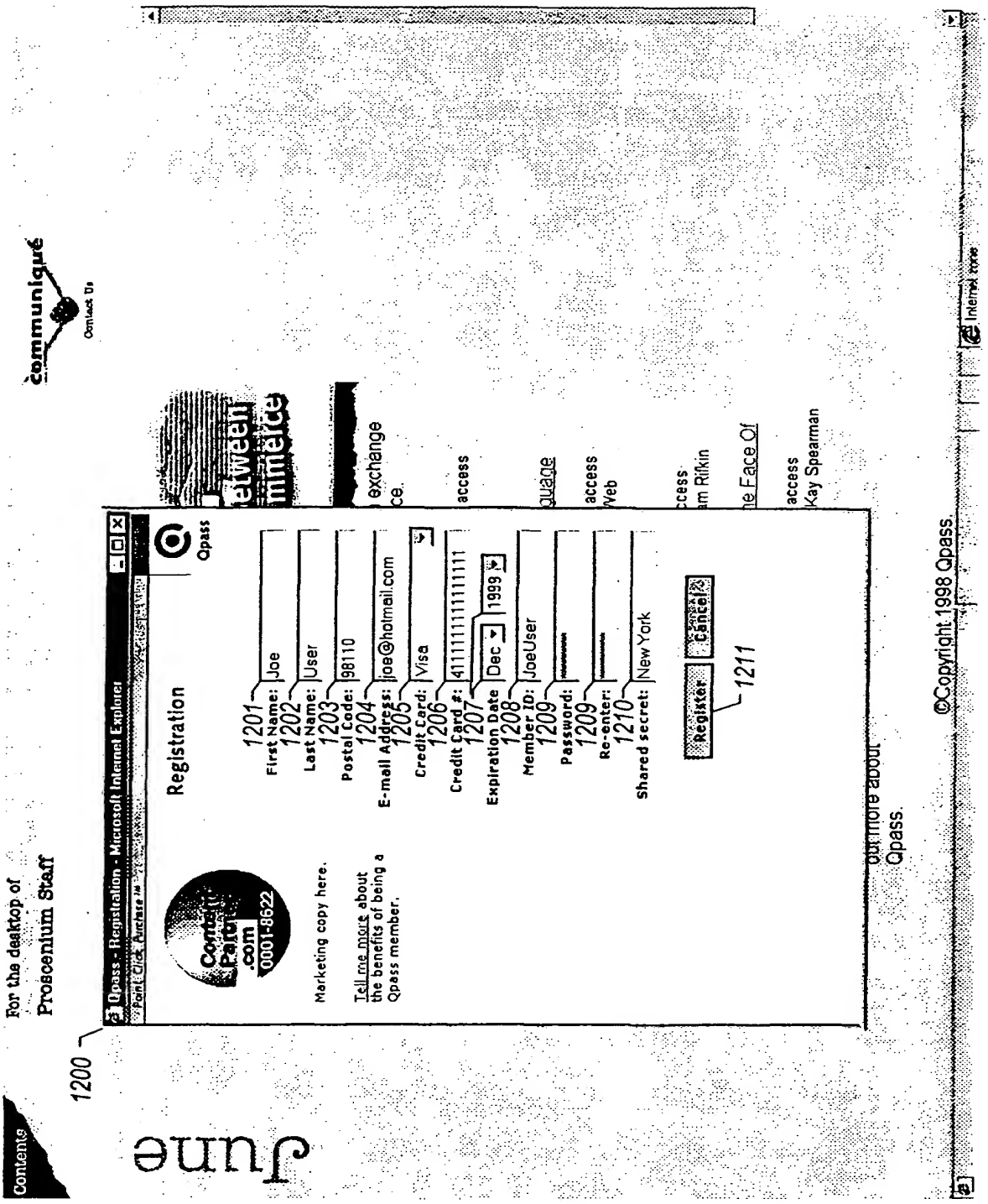

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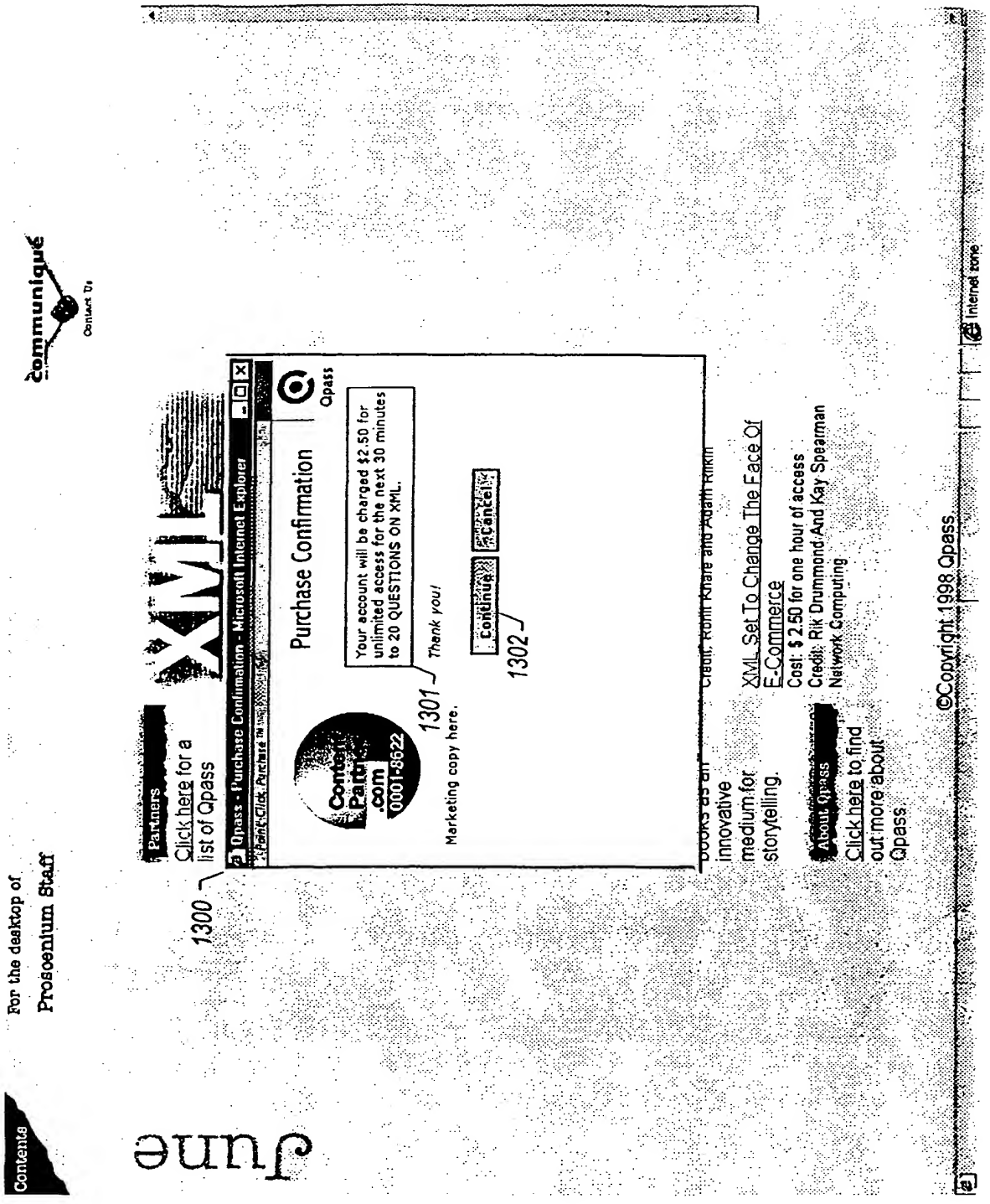

Fig. 13

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1400

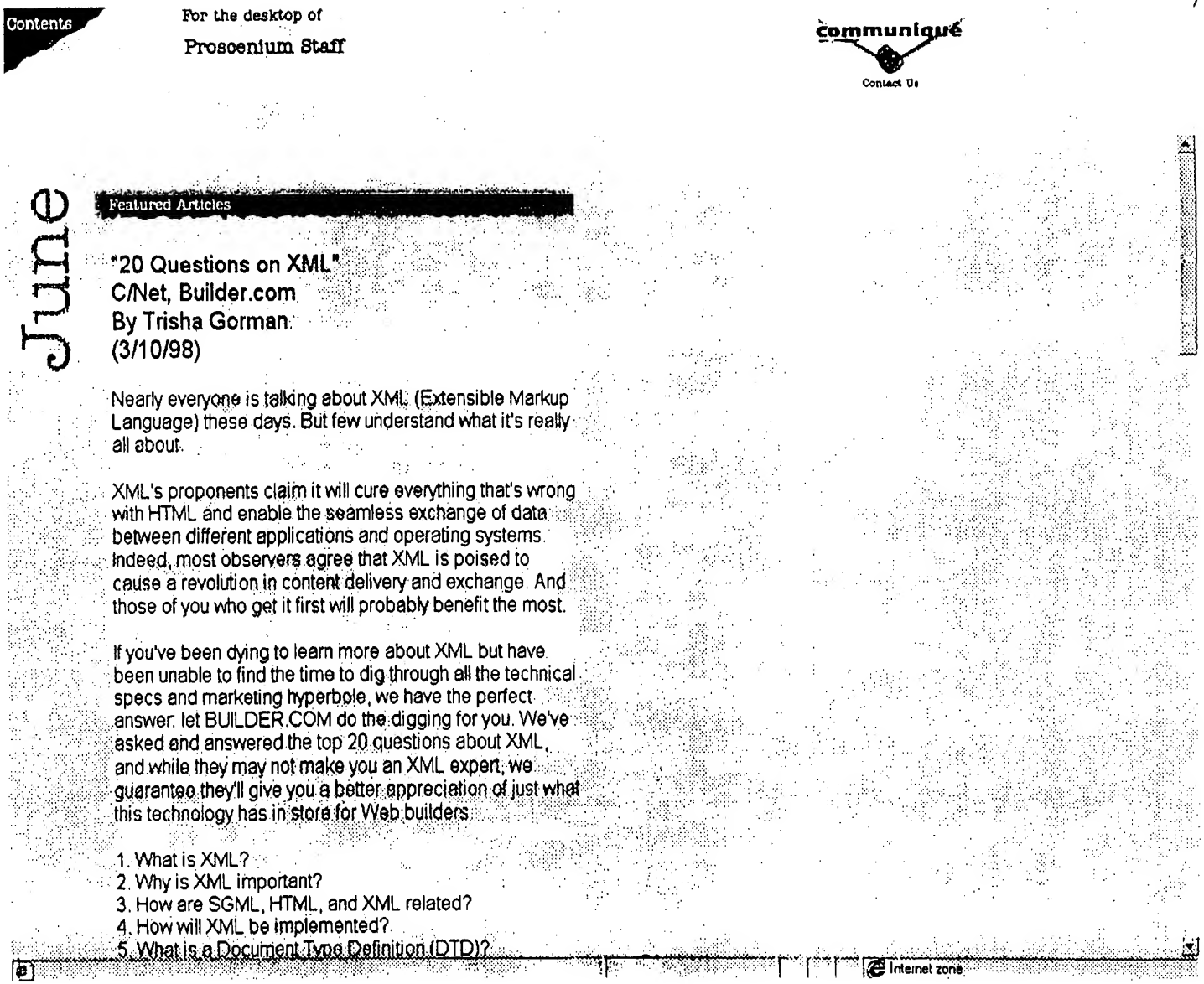

Fig. 14

BNSDOCID: <WO_____0033221A1_>

1500

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[Home] [Search] [GLOBUS & NTDB] [E-mail] Previous Page Next Page

1501 Program Description
1502 AGRICULTURAL CHEMICALS FY98
1503 AGRICULTURAL EQUIPMENT FY98
1504 AIR CONDITIONING/REFRIGER'N EQUP FY98
1505 AIRCRAFT AND PARTS FY98
1506 AIRPORT/GROUND SUPPORT EQUIP FY98
1507 APPAREL FY98
1508 ARCHITECTURE/CONSTR/ENGINEER'G FY98
1509 AUTOMOTIVE PARTS/SERVICE EQUIPMENT FY98
1510 AUTOS AND TRUCKS FY98
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1512 BUILDING PRODUCTS FY98
1513 CHEMICAL AND PLASTICS PROD EQUIP FY98
1514 CHEMICALS AND COMPOSITES FY98
1515 COMMERCIAL AND PLEASURE BOATS FY98
1516 COMPUTER SOFTWARE FY98
1517 COMPUTERS AND BUSINESS EQUIP FY98
1518 COMPUTER/INFORMATION SERVICES FY98
1519 CONSTRUCTION EQUIPMENT FY98
1520 COSMETICS AND TOILETRIES FY98
1521 DEFENSE INDUSTRY EQUIPMENT FY98
1522 DRUGS AND PHARMACEUTICALS FY98
1523 EDUCATION/TRAINING FY98
1524 ELECTRICAL POWER SYSTEMS FY98
1525 ELECTRONIC COMPONENTS FY98
1526 ELECTRONICS IND PROD/TEST EQUIP FY98

Internet zone

Fig. 15

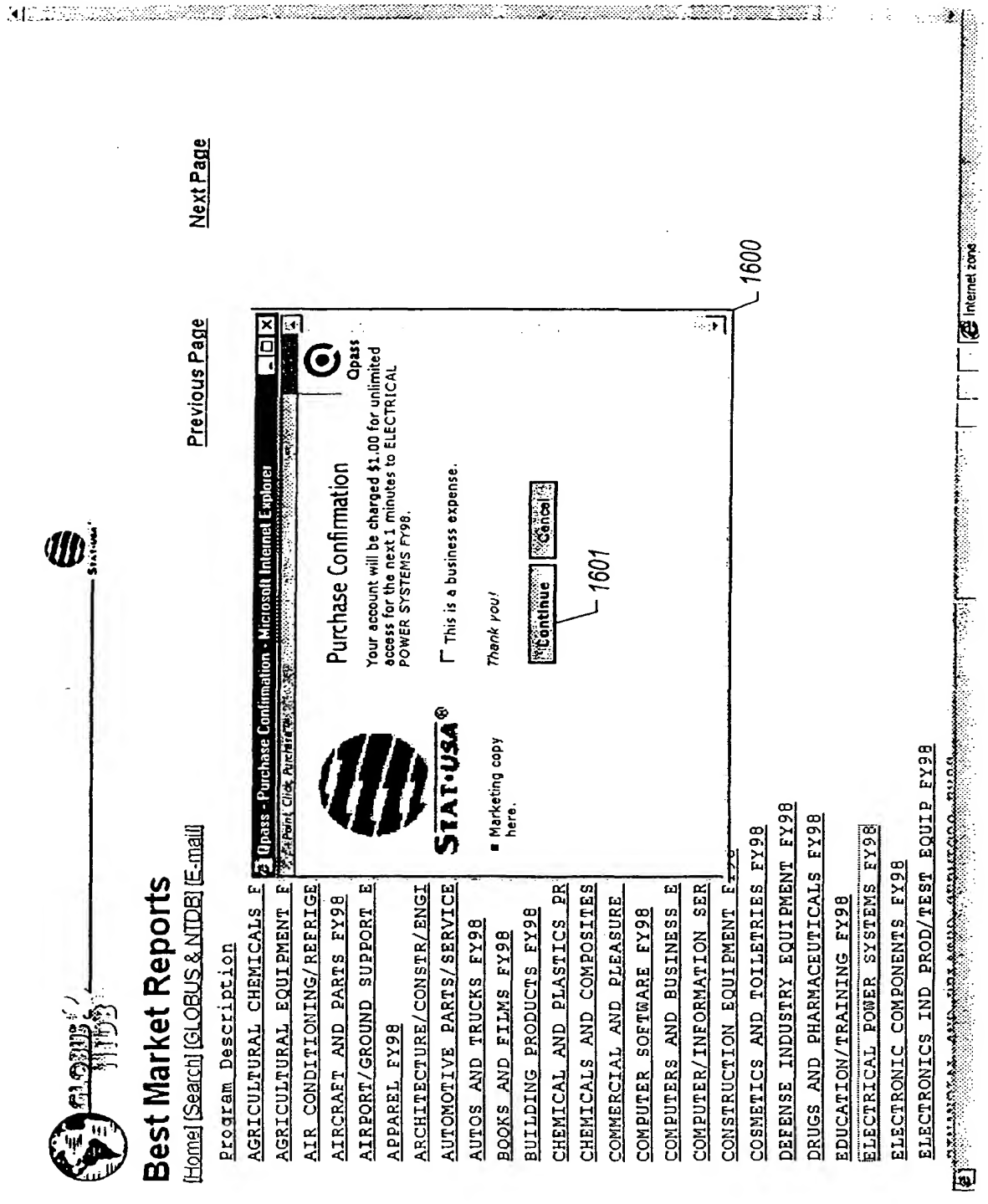

Fig. 16

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1700

ELECTRICAL POWER SYSTEMS FY98 BEST MARKET REPORTS USDOC, INTERNATIONAL TRADE ADMINISTRATION
Product ID: 24

TITLE: ELECTRICAL POWER SYSTEMS FY98

SUBJECT COUNTRY(IES): WORLD

POST OF ORIGIN: COMMERCE

SERIES: BEST MARKET REPORTS (BMR)

ITA INDUSTRY CODE: ELP, REQ

DATE OF REPORT (YYMMDD): 971027

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OFFICER'S TITLE:

NUMBER OF PAGES: 63

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Best Market Report FY98:
ELECTRICAL POWER SYSTEMS

ELECTRICAL POWER SYSTEMS

Countries included:

ARGENTINA

Done Local intranet zone

Fig. 17

1800 transaction table

1801 Customer	1802 Merchant	1803 Item	1804 Amount	1805 Expiration	1806 Outstanding
⋮					
1811 Jim	Customer News	Vacuum Rating Guide	US$ 3.00	None	Yes
1812 Joe User	Content Partner	20 Questions on XML	US$ 2.50	11/3/98 2:25 p.m.	Yes
1813 Joe User	Stat USA	Electrical Power Systems FX 98	US$ 1.00	11/3/98 9:11 a.m.	Yes
1814 Sally Shopper	Recipeland	Dessert Recipes	US$ 3.00	12/21/98 10:00 a.m.	No
1815 Sally Shopper	Recipeland	Lunch Recipes	US$ 0.25	11/30/98 12:00 a.m.	No
1816 Sally Shopper	Item Publishing	Home Journal	US$ 0.25	11/1/99 12:00 noon	Yes
1817 Sally Shopper	Finance Data	General Electric Annual Report	US$ 7.75	11/1/99 12:00 p.m.	Yes
1818 Sally Shopper	Autoworld	Fuel Pump Repair	US$ 1.00	3/5/99 9:00 a.m.	Yes
1819 Sally Shopper	Autoworld	Tire Upgrade	US$ 1.25	12/1/98 11:18 am	Yes
1820 Sam Client	Horticulture Today	Renewal Chart	US$ 0.75	12/29/99 12:00 a.m.	Yes
	⋮				

Fig. 18

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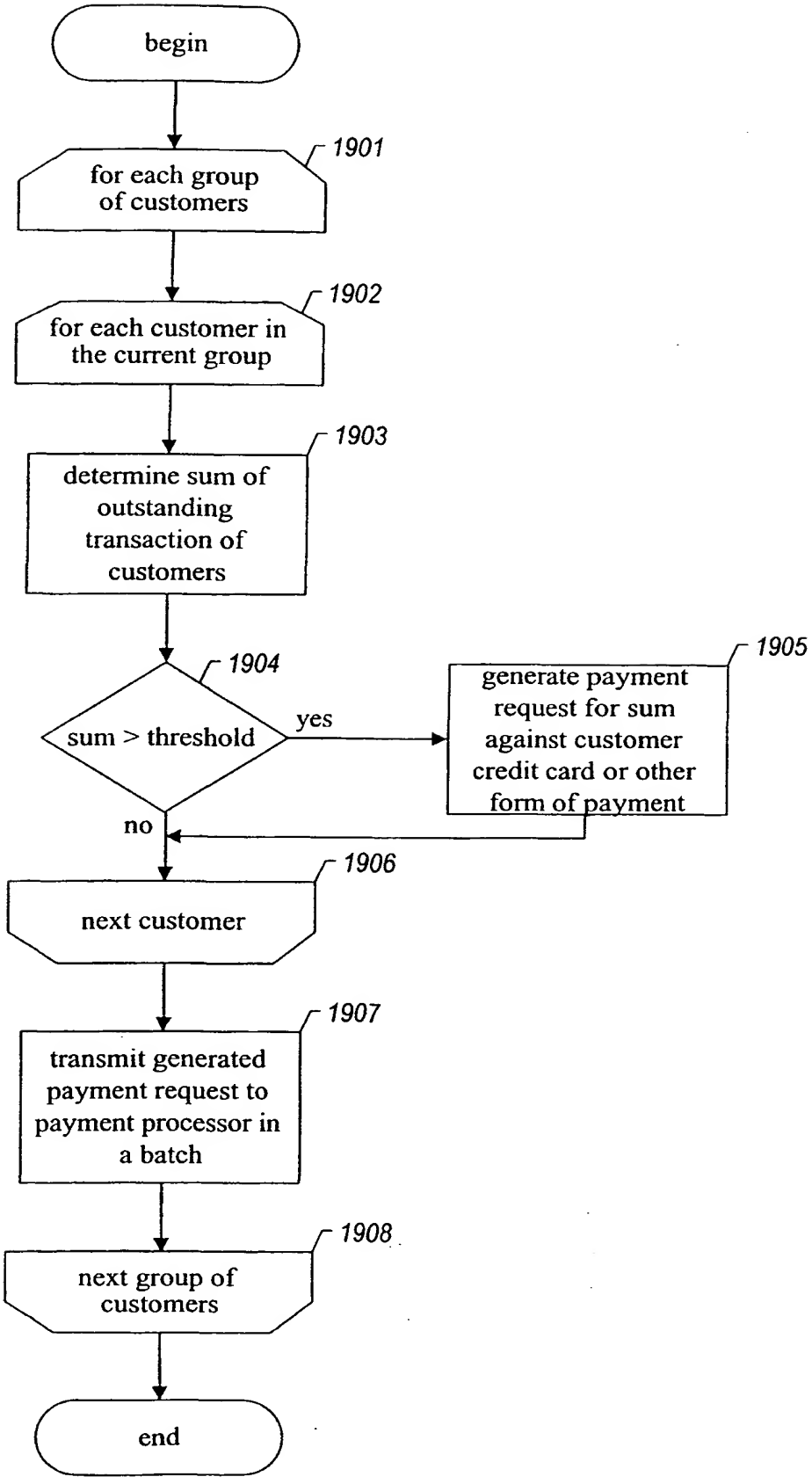

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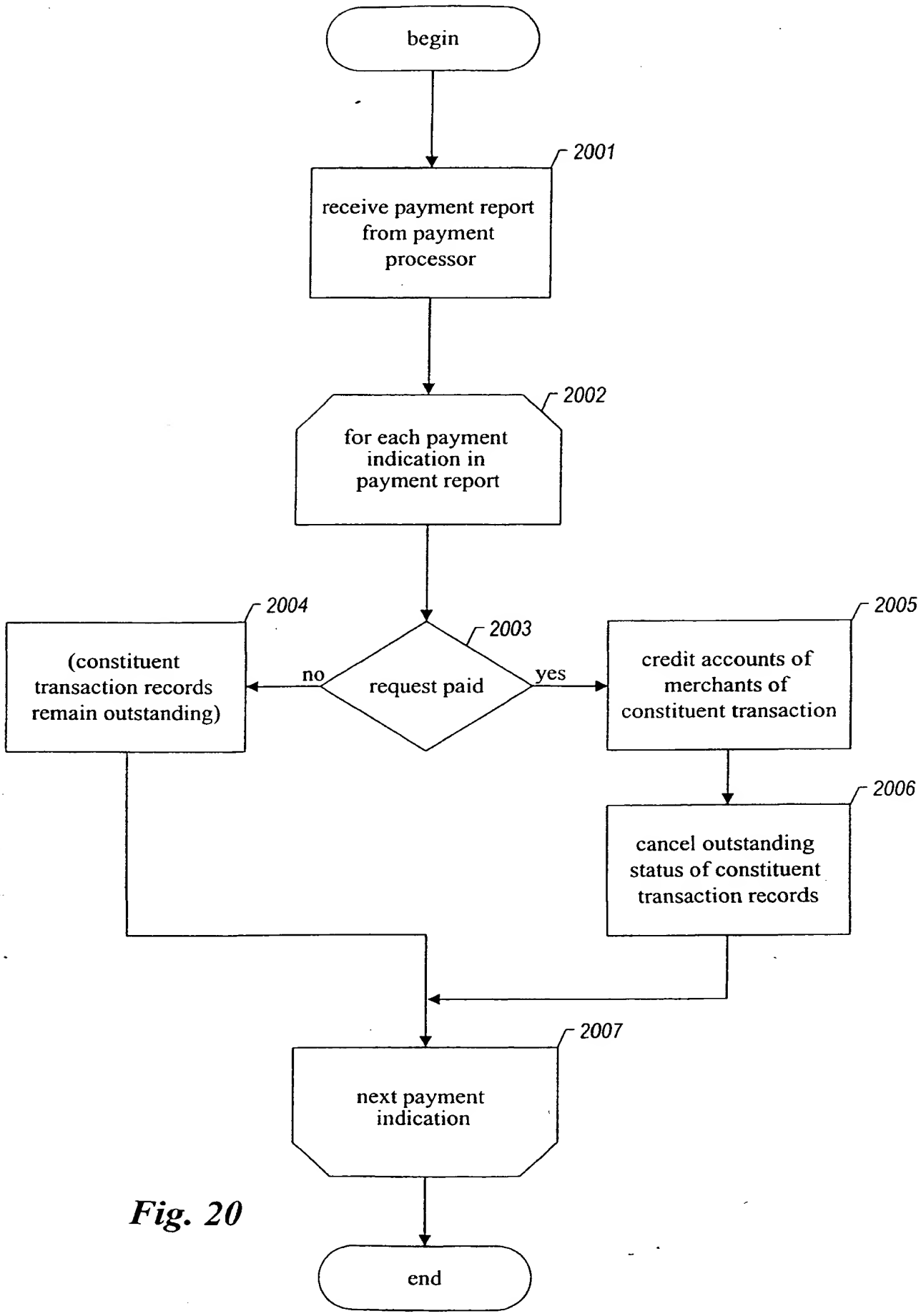

Fig. 20

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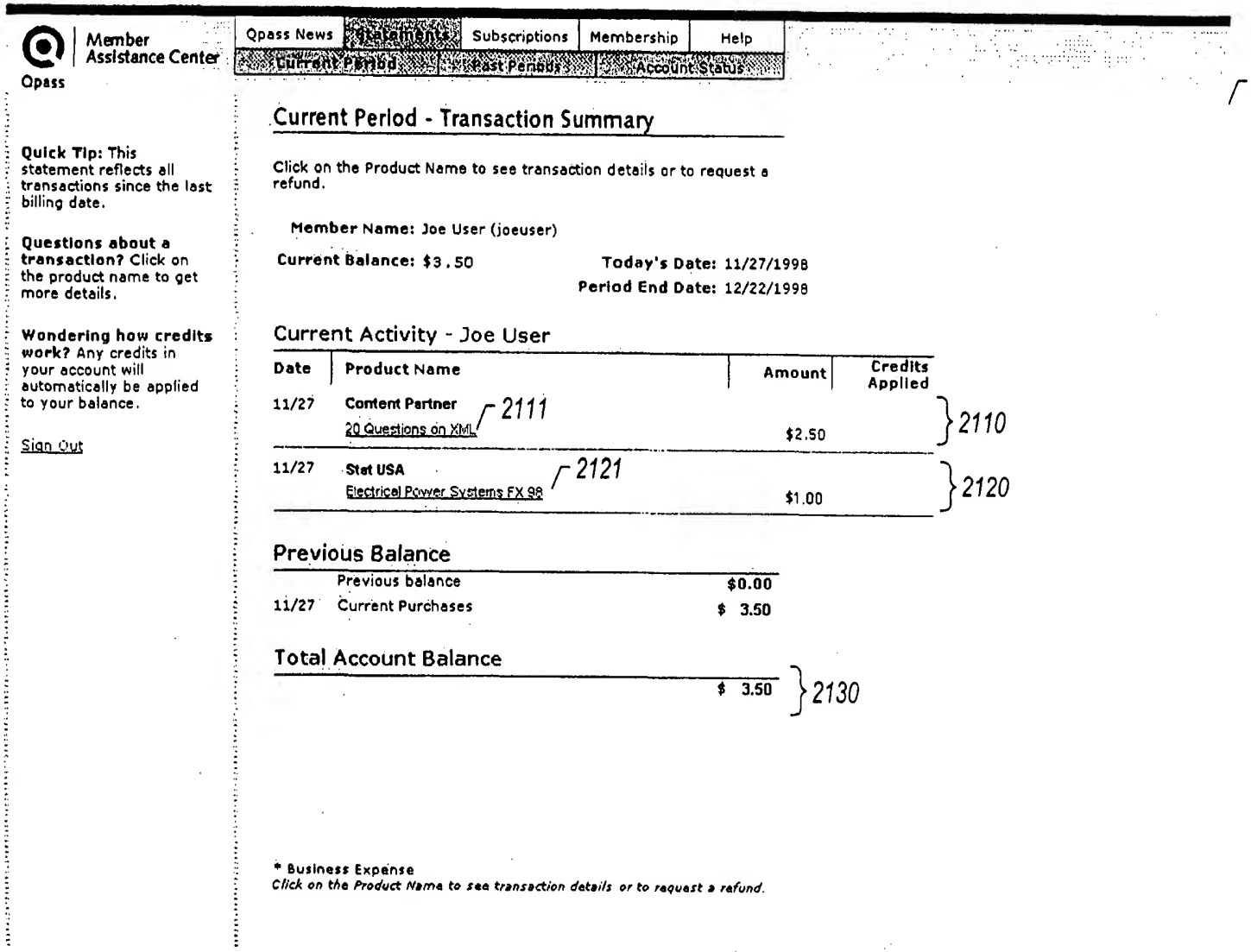

Fig. 21

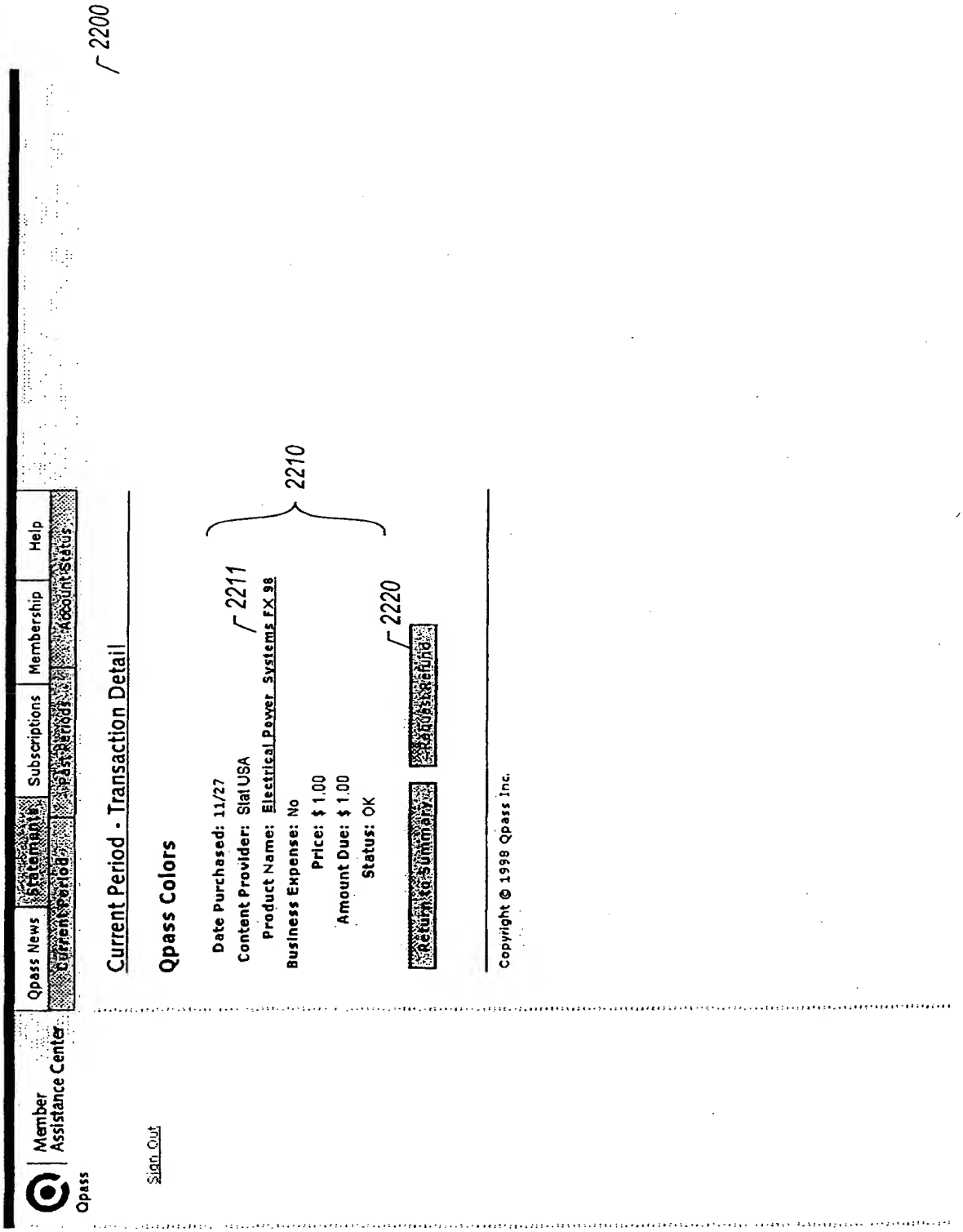

Fig. 22

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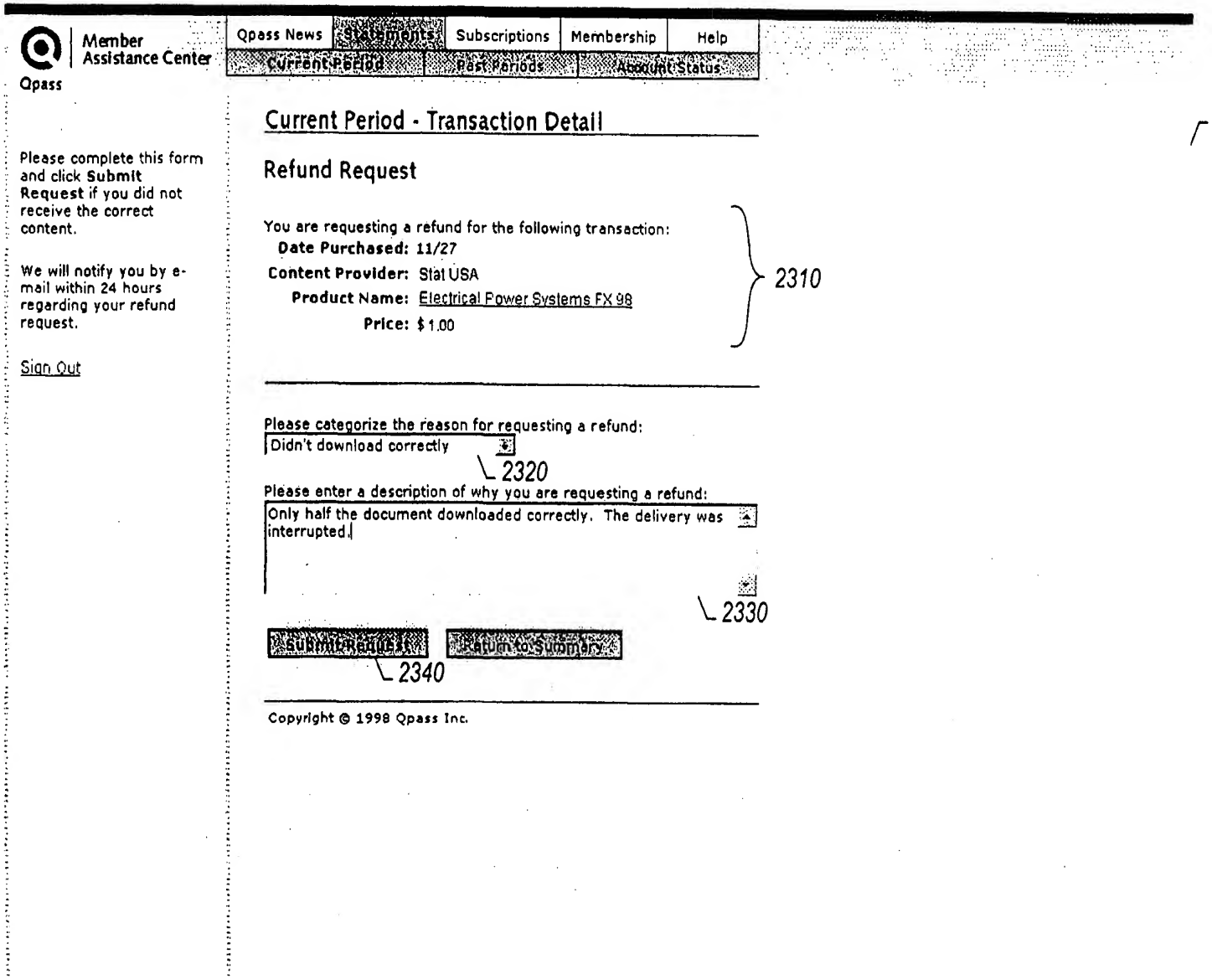
Member Assistance Center
Qpass
Qpass News
Statements
Subscriptions
Membership
Help
Current Period
Past Periods
Account Status
Please complete this form and click Submit Request if you did not receive the correct content.
We will notify you by e-mail within 24 hours regarding your refund request.
Sign Out
Current Period - Transaction Detail
2300
Refund Request
You are requesting a refund for the following transaction:
Date Purchased: 11/27
Content Provider: Stat USA
Product Name: Electrical Power Systems FX 98
Price: $1.00
2310
Please categorize the reason for requesting a refund:
Didn't download correctly
2320
Please enter a description of why you are requesting a refund:
Only half the document downloaded correctly. The delivery was interrupted.
2330
Submit Request
Return to Summary
2340
Copyright © 1998 Qpass Inc.

Fig. 23

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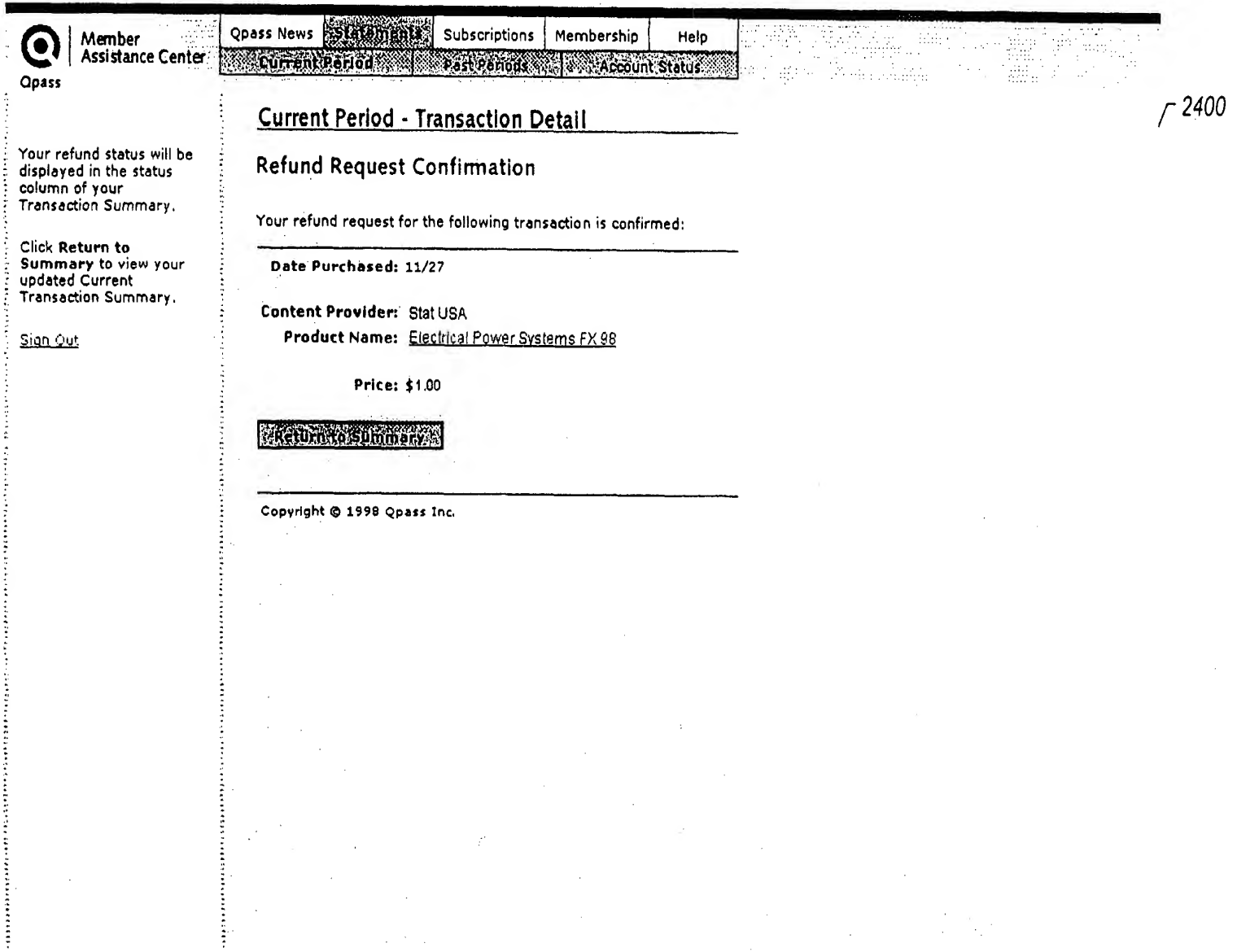

2400

Fig. 24

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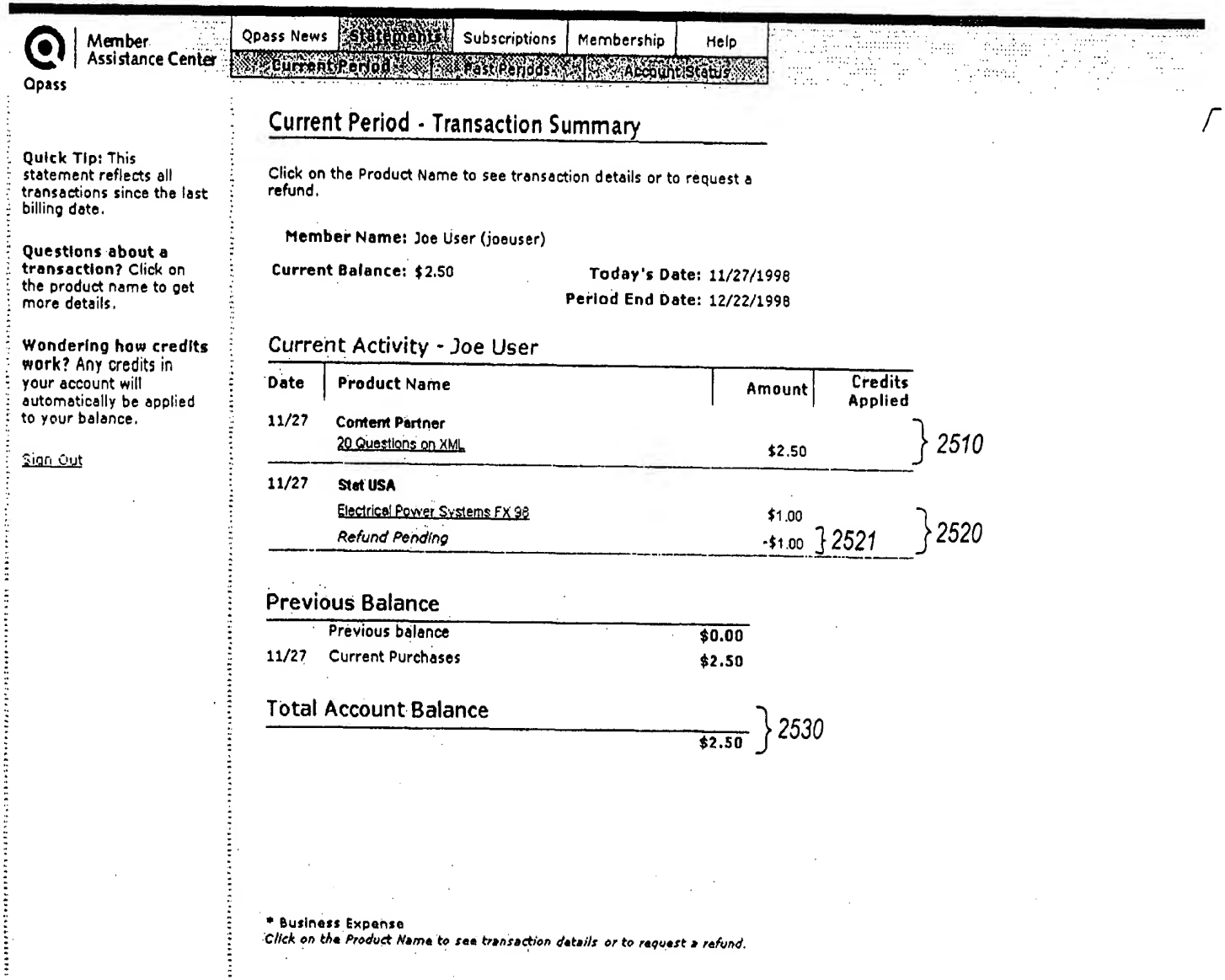

Fig. 25

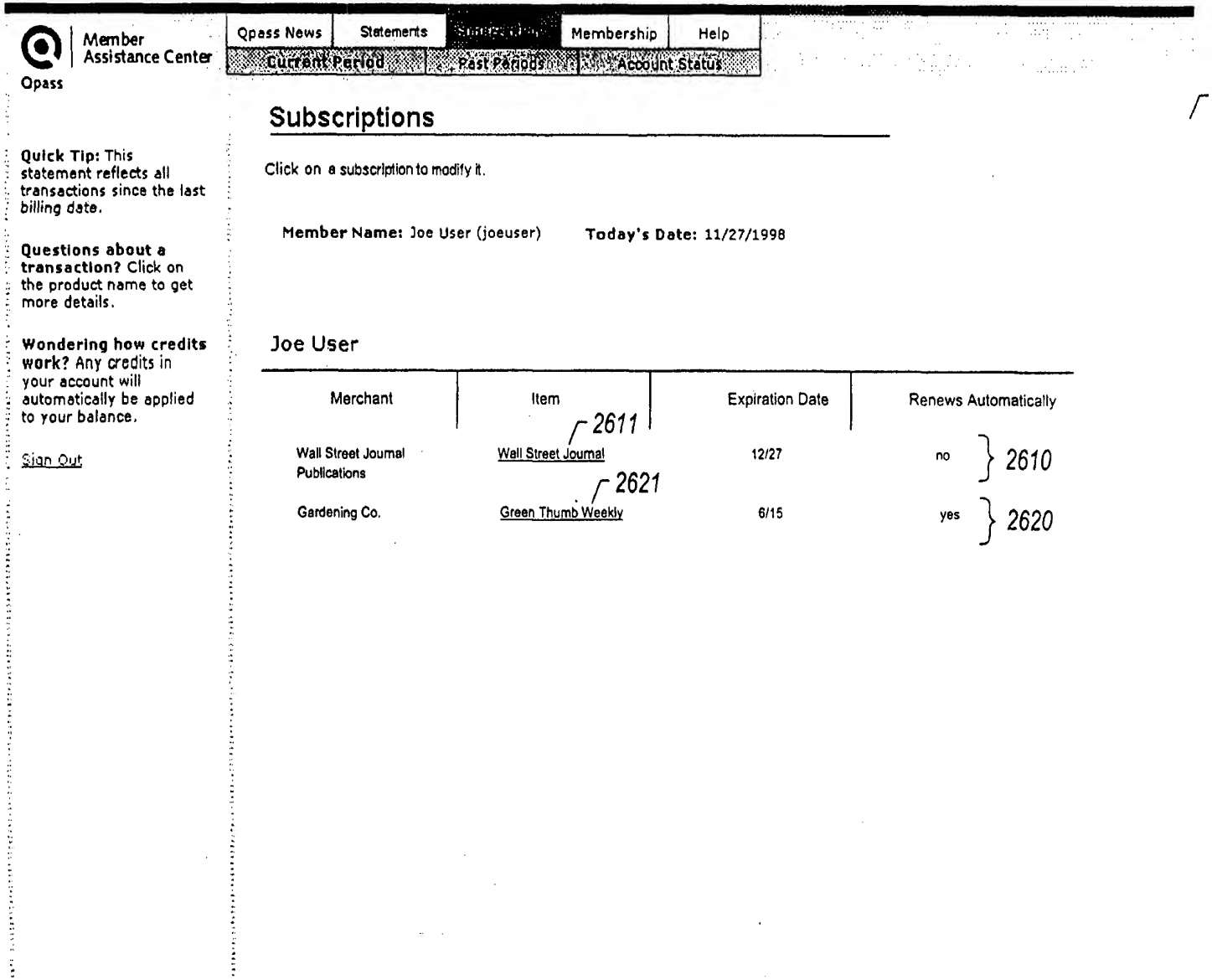
Member Assistance Center
Qpass
Qpass News
Statements
Membership
Help
Current Period
Past Periods
Account Status
2600
Subscriptions
Quick Tip: This statement reflects all transactions since the last billing date.
Questions about a transaction? Click on the product name to get more details.
Wondering how credits work? Any credits in your account will automatically be applied to your balance.
Sign Out
Click on a subscription to modify it.
Member Name: Joe User (joeuser)
Today's Date: 11/27/1998
Joe User
Merchant
Item
Expiration Date
Renews Automatically
2611
Wall Street Journal Publications
Wall Street Journal
12/27
no
2610
2621
Gardening Co.
Green Thumb Weekly
6/15
yes
2620

Fig. 26

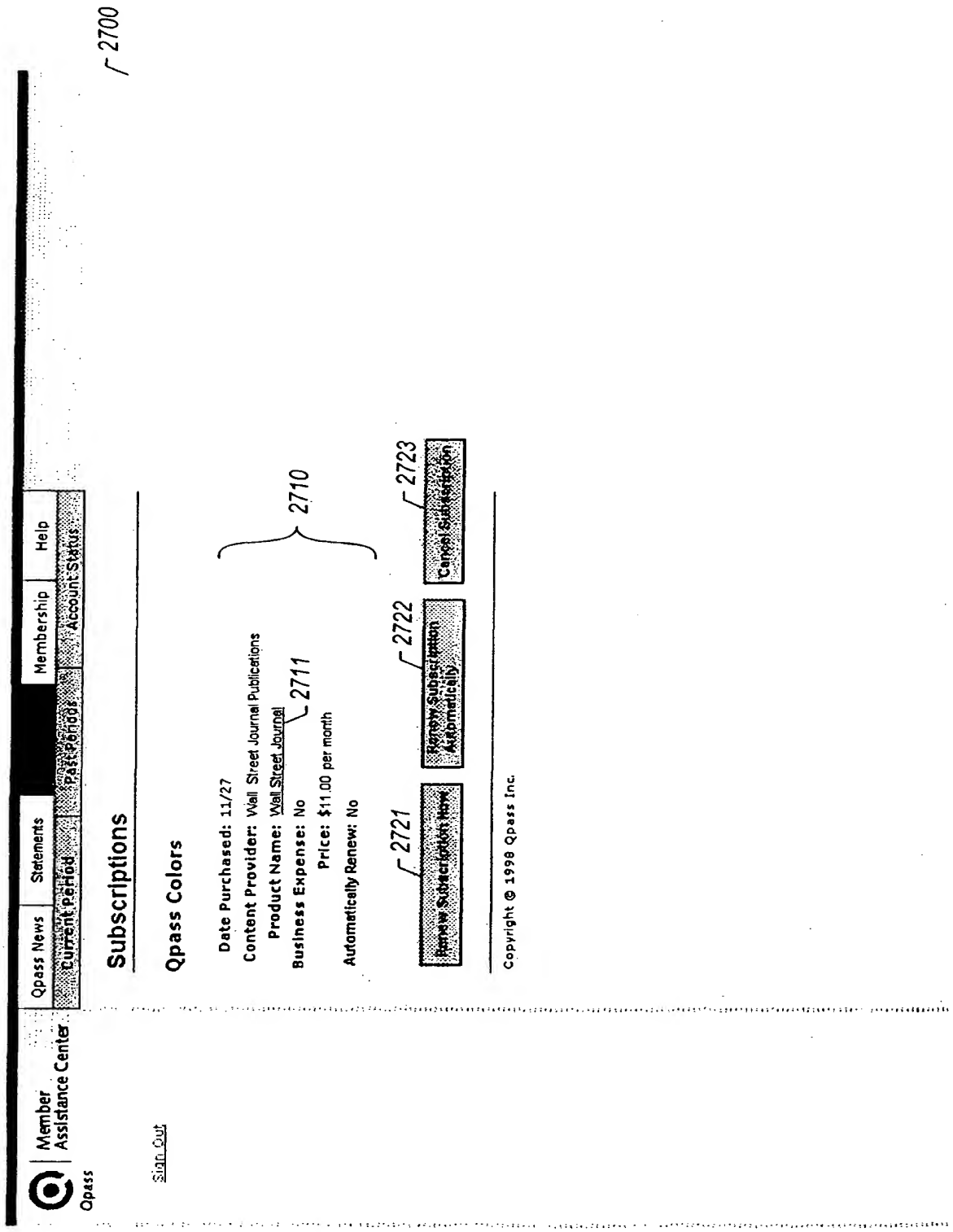

Fig. 27

BNSDOCID: <WO_____0033221A1_I_>

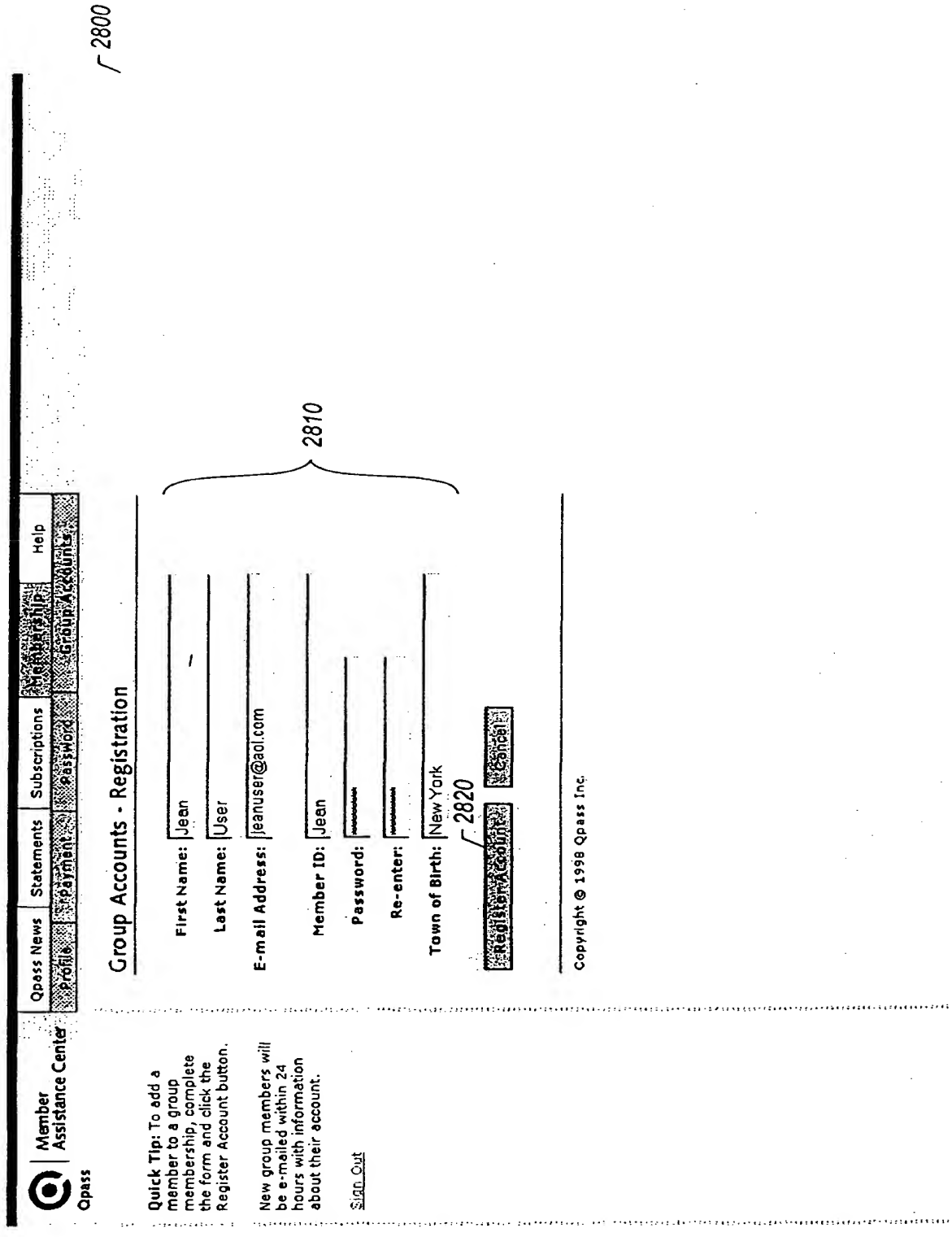

Fig. 28

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BNSDOCID: <WO_____00332211_1_>

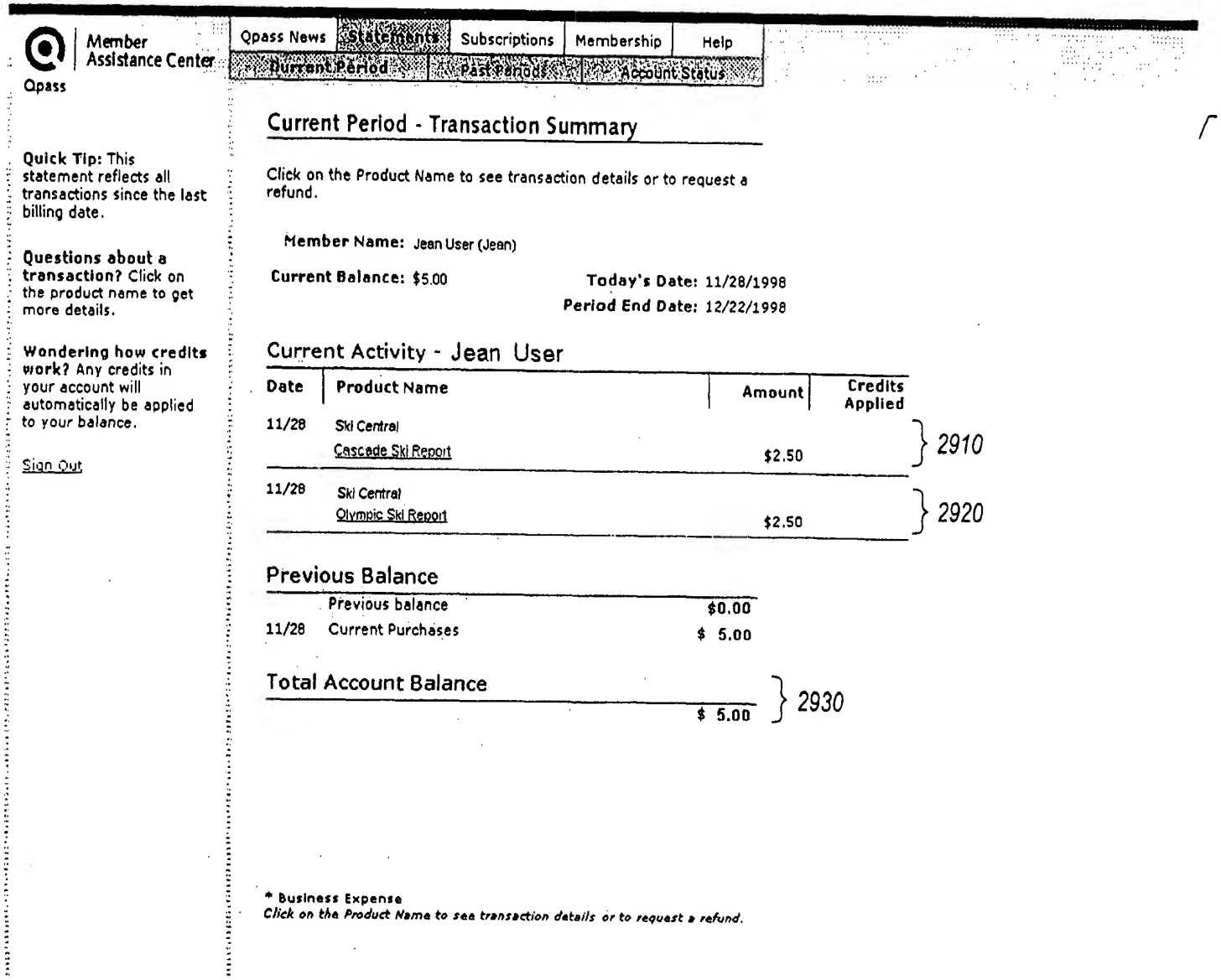

Fig. 29

BNSDOCID: <WO_____0033221A1_1_>

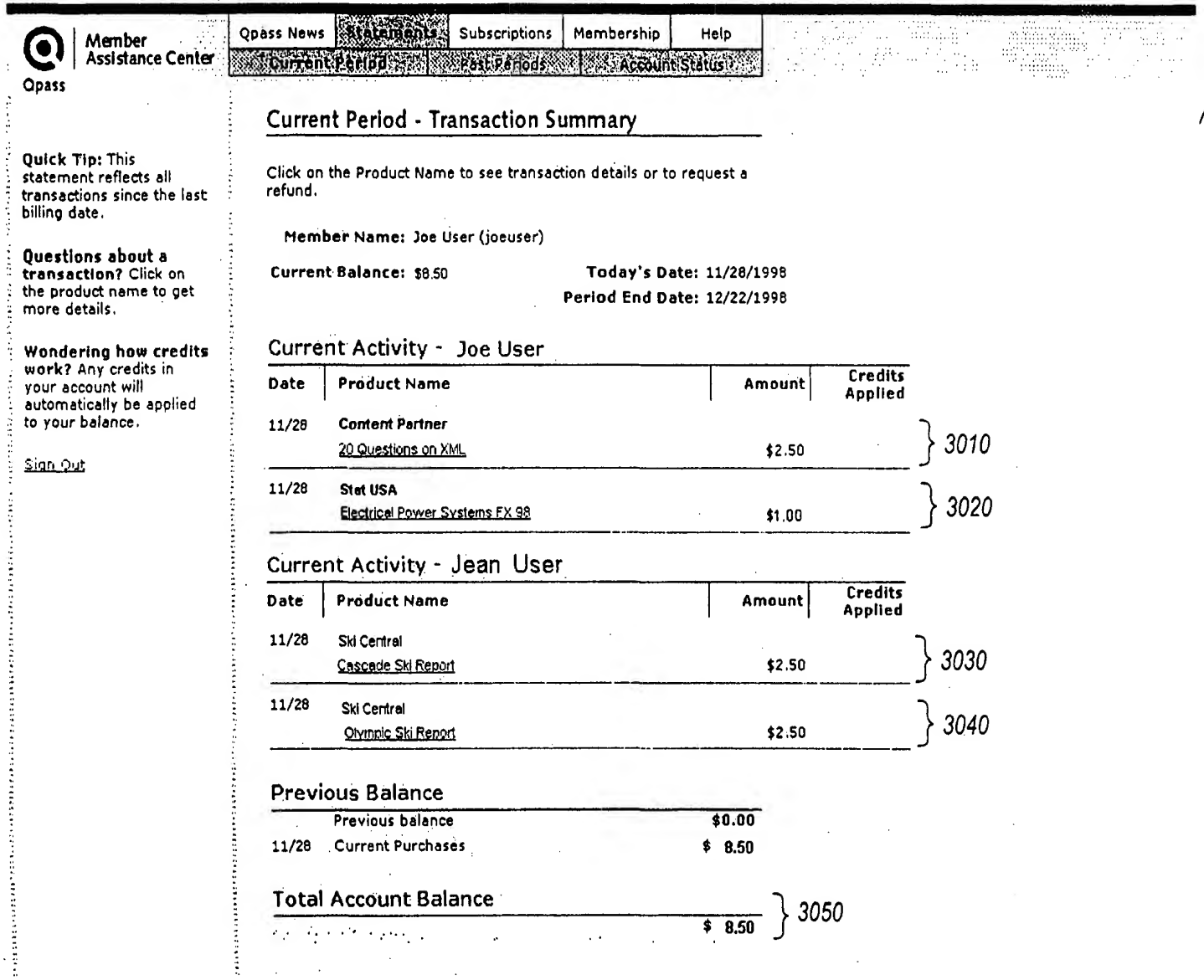

Fig. 30

INTERNATIONAL SEARCH REPORT

Inter. nal Application No
PCT/US 99/27879

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BAKER: "In the money - QPass has big hopes for small Net sales" PUGET SOUND BUSINESS JOURNAL, 'Online! 12 October 1998 (1998-10-12), XP002134402 Seattle, WA, US Retrieved from the Internet: <URL:http://www.amcity.com/seattle/stories /1998/10/12/story3.html> 'retrieved on 2000-03-30! the whole document — -/—	1-50

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 March 2000	13/04/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Abram, R

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BNSDOCID: <WO_____0033221A1_I_>

INTERNATIONAL SEARCH REPORT

Inter. nal Application No
PCT/US 99/27879

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	SIRBU ET AL: "NetBill: An Internet Commerce System Optimized for Network-Delivered Services" IEEE PERSONAL COMMUNICATIONS, vol. 2, no. 4, August 1995 (1995-08), pages 34-39, XP000517588 New York, NY, US the whole document	1-50
A	RAFTER: "Micropayment Firms Seek New Ways to Cash In" THESTANDARD, 'Online! 28 May 1998 (1998-05-28), XP002134403 Retrieved from the Internet: <URL:http://www.thestandard.com/article/display/0,1151,423,00.html> 'retrieved on 2000-03-30! the whole document	1-50
A	US 5 684 965 A (PICKERING) 4 November 1997 (1997-11-04) the whole document	
A	US 5 247 575 A (SPRAGUE ET AL) 21 September 1993 (1993-09-21) the whole document	

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

BNSDOCID: <WO_____0033221A1_I_>

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter. nal Application No
PCT/US 99/27879

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5684965 A	04-11-1997	AU 5364794 A	09-05-1994
		EP 0692119 A	17-01-1996
		WO 9409439 A	28-04-1994
		US 5483445 A	09-01-1996
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		DE 68928694 D	09-07-1998
		DE 68928694 T	17-12-1998
		EP 0472521 A	04-03-1992
		WO 9002382 A	08-03-1990

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(71) Applicant *(for all designated States except US)*: QPASS, INC. [US/US]; Suite 500, 83 South King Street, Seattle, WA 98104 (US).

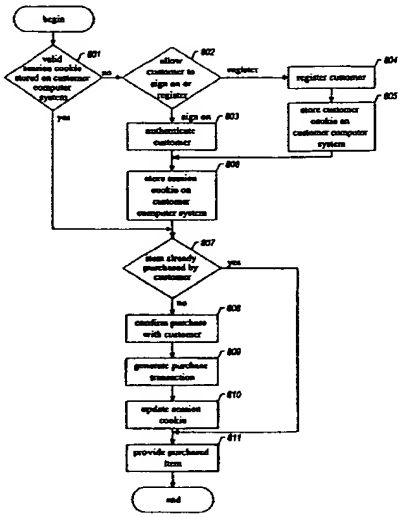
(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: COCKRILL, Michael, P. [US/US]; 2350 West Lake Sammamish Parkway NE, Redmond, WA 98052 (US). BRYANT, William, K. [US/US]; 170 Prospect Street, Seattle, WA 98109 (US). FRANKLIN, D., Chase [US/US]; 159 Ward Street, Seattle, WA 98109 (US). MCNEELY, Mark, H. [US/US]; 9425 SE 52nd, Mercer Island, WA 98040 (US). RYAN, Timothy, J. [US/US]; 16751 NE 137th Street, Woodinville, WA 98072 (US). SWEET, Andrew, P. [US/US]; 16222 193rd Avenue SE, Renton, WA 98058 (US). SIADEK, Steven, J. [US/US]; Unit A, 1723 - 25th Avenue, Seattle, WA 98122 (US). FAITH, Ronald, R., Jr. [US/US]; 10408 NE 190th, Bothell, WA 98011 (US). GORIS, J., Mark [US/US]; 3446 - 33rd Avenue West, Seattle, WA 98199 (US). MALEK, Thor, A. [US/US]; 36514 Mann Road, Sultan, WA 98294 (US).

(74) Agents: DONOHUE, Michael, J. et al.; Seed and Berry LLP, Suite 6300, 701 Fifth Avenue,, Seattle, WA 98104-7092 (US).

[Continued on next page]

(54) Title: ELECTRONIC COMMERCE USING A TRANSACTION NETWORK



(57) Abstract: The present invention is directed to a transaction network that facilitates and simplifies purchase transactions between any number of customers and any number of merchants. The transaction network is primarily utilized in the sale and purchase of digital content via a network such as the Internet. The transaction network registers and authenticates customer purchase activities and maintains customer account data including payment information. Once registered, a customer will generally not register again for further purchase activities at participating merchant sites. Additionally, the transaction network provides a single, central authentication mechanism for all participating merchant sites using a single customer identifier and password. Further, the transaction network accumulates purchase information across all of the merchant sites and the ultimate payment processing of those purchase transactions. Payment processing generally occurs on a periodic basis, enabling the accumulation of multiple purchase transactions within a participating customer's account. The network additionally preferably provides customers with centralized, automated services for customer account management, product refunds, subscription management, and multiple purchasing accounts linked to the same payment account.

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(81) **Designated States** *(national)*: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) **Designated States** *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

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ELECTRONIC COMMERCE USING A TRANSACTION NETWORK

TECHNICAL FIELD

The present invention is directed to the field of electronic commerce, and more particularly, to the field of facilitating user registration and authentication, purchasing from multiple merchants, aggregating payment transactions, and merchant remittance for electronic commerce transactions, such as those conducted on the Internet.

BACKGROUND OF THE INVENTION

The World Wide Web ("the Web") is an interactive computer environment. The Web uses a collection of common protocols, including the Hypertext Transfer Protocol ("HTTP"), and file formats, including Hypertext Markup Language ("HTML"), to enable users to obtain information from or exchange information with a huge number of organizations, via the Internet, from virtually anywhere in the world. In order to establish a presence on the Web, organizations generally construct a "Web site." Such a Web site generally includes a collection of documents relating to the organization that is accessible by users using an address on the Web, called a Universal Resource Locator ("URL"), publicized by the organization.

The Web is increasingly used as a channel for commercial activity. Many organizations have achieved great success at selling products and services through their Web sites. For instance, a significant fraction of the airline tickets, music compact discs, and books sold today are sold via the Web.

In order to attract customers for such sales, a merchant must generally advertise its Web site on the Web or another more traditional media, or otherwise pay to attract customers. In most such sales, the purchase price is paid using a credit card or check card. In order to complete such a purchase, the customer provides to the merchant information associated with the credit card or check card, such as the number and expiration date of the credit card or check card. The customer commonly

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also provides additional information about himself or herself, such as name and postal address for delivering physical goods.

The merchant uses the provided credit card or debit card information to generate a request for payment of the purchase price, which it transmits to a payment processor. The payment processor in turn charges the purchase price to the customer's credit card or check card, and credits the merchant's account in the amount of the purchase price. For a particular customer, this process is generally repeated for each merchant from which the customer makes a purchase. Similarly, a merchant generally repeats this process for each purchase made by a customer.

The foregoing approach is efficient for purchases having a significant purchase price, such as those above US$ 20. However, because a significant portion of the actual costs of processing a credit card or check card transaction are fixed and not related to the amount of the transaction, processing credit card transactions for lower amounts is generally cost-prohibitive. As a result, credit card and check card transactions are generally not used to purchase goods and services having a relatively low price, such as those below US$ 20. Additionally, the high cost of providing customer service on the Internet, including such recurring operations as supplying lost passwords, raises the cost for selling goods, thus raising the minimum price at which goods must be sold to realize a profit.

While other forms of payment, such as cash proxies, have been proposed for use in such lower-priced transactions, these other forms of payment have failed to achieve acceptance on the Web. This is largely due to the amount of extra interaction that these cash proxy payment methods require from the customer, as customers are often unwilling to tolerate a great deal of inconvenience to purchase an inexpensive item. Moreover, even if such an alternative form of payment did achieve acceptance on the Web, they typically impose significant processing costs on those merchants that accept them, and do nothing to alleviate customer service costs.

Since credit card and check card transactions are the only forms of payment that have achieved general acceptance on the Web, it is generally not possible to buy such lower-priced goods and services on the Web. These lower-

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priced purchases are, however, important. In particular, digital goods, such as electronic magazine articles, music, or games, delivered via the Web have a very small marginal cost. While there may be a significant demand for some digital goods if priced at appropriately modest levels, when their price is set at or above the minimum viability threshold for credit card and check card transactions, demand is very low or nonexistent. Therefore, because goods cannot be sold via credit card or check card at a price below the minimum viability threshold, and there is little demand at or above the minimum viability threshold, such goods are incapable of generating significant revenue and generally are not offered for sale.

The transactional model discussed above, in which customers make purchases directly from merchants using credit card or check card transactions, have serious disadvantages for both customers and merchants. First, as noted above, low-priced purchases are generally impossible to conduct using this model, which generally precludes customers from purchasing and merchants from selling certain products, and limits the number of customers that can purchase others. Further, the model requires each customer to expend significant effort managing his or her relationship with each merchant, and also requires each merchant to make significant up-front and continuing investments in managing its relationship with its customers and with its payment processor.

Figure 1 is a relationship diagram showing the relationships arising between customers, merchants, and payment processors in accordance with the conventional transaction model. The diagram shows a number of customers 110, who engage in purchase transactions with a number of merchants 120. Each line between a customer 110 and a merchant 120 represents a relationship between the customer and the merchant that must be managed by both the customer and the merchant.

From the customer's perspective, he or she must provide credit card or check card payment information to each new merchant from which the customer makes a purchase. To do so is generally both inconvenient, because the customer must enter the same information over and over, and disconcerting, because the

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customer is required to entrust this sensitive information to several different parties, one or more of which may be untrustworthy. In addition, customers must learn the customer service policies of every merchant from which they purchase, which can be a burdensome process, especially for modestly-priced purchases.

From the merchant's perspective, it must build, operate, and scale up an infrastructure for accepting credit or check card payments from customers, for delivering purchased goods, and for providing customer service to those customers. Such infrastructures are generally expensive, and often distract merchants from their more fundamental role of creating and selling products.

Further disadvantages arise in the conventional model when a merchant subjects customers to user authentication. Merchants often use user authentication, the process of establishing that a Web user is actually a returning customer, to enable customers to make subsequent purchases using the payment information from a previous purchase, or to facilitate continuing consumption of purchased goods, such as continued access to an online periodical to which the customer has purchased a subscription. Generally, in order to authenticate as a returning customer, a user must enter a user name and password that is specific to each merchant. From the customer's perspective, submitting to user authentication involves the disadvantages of having to use a user name that is unique among those of each merchant's customers and thus is not always freely chosen by the customer, having to remember or record each of these different member names, and having to re-authenticate each time the customers move from the Web site of one merchant to the Web site of another, which can prove burdensome and frustrating for users.

From the merchant's perspective, performing user authentication involves the disadvantages of having to build, operate, and scale up a mechanism for performing user authentication and a customer database to support user authentication, an effort that is potentially both costly and distracting. In addition to relationships with its customers, in the conventional model a merchant must also maintain a relationship with a payment processor 130 to process credit or check card transactions. Maintaining a relationship with a payment processor requires the

merchant to shop for and negotiate a contract with a payment processor, and to build, operate, and scale up a mechanism for communicating with the payment processor, another effort that is potentially both costly and distracting.

It can be seen from the foregoing that, from the perspective of merchants, a reliable system for selling goods, including lower-priced goods on the Web, without having to develop an infrastructure for accepting payment, for registering and authenticating customers would have significant utility, or for providing customer support. It can further be seen that, from the perspective of customers, a convenient system that facilitates the purchase of goods, including lower-priced goods from a number of different merchants without having to submit payment information to each merchant or reauthenticate to each merchant, and which provides centralized customer service for purchases made from multiple merchants would also have significant utility.

SUMMARY OF THE INVENTION

The present invention provides a new type of transaction network ("the network") for facilitating purchase transactions between any number of customers and any number of merchants participating in the network. The network is well-suited to the purchase of low-priced "digital goods," as well as the purchase of other products and services, especially those having relatively low prices, and enables customer to use traditional forms of payment, such as credit cards. The network relieves merchants of the burdens of each maintaining a separate infrastructure for authenticating and accepting payment from customers, delivering goods, and providing customer service. The network further provides a single registration process during which the customer provides credit card payment information once for all of the merchants, as well as universal authentication to the Web sites of all of the merchants through a single user interaction. The network yet further facilitates the migration of large existing groups of users from other authentication systems, such as those of merchants, to the authentication system provided by the network. The network additionally preferably provides customers with centralized, automated

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services for customer account management, product refunds, subscription management, and multiple purchasing accounts linked to the same payment account.

Figure 2 is a relationship diagram showing the relationships defined for customers and merchants by the network. It can be seen that each customer 210, rather than maintaining a separate purchasing relationship with each merchant 220, need only maintain a single purchasing relationship with the network 240. This means that the customer need only provide payment information and to register and authenticate to the network, not to each merchant. Similarly, each merchant 220, rather than maintaining a relationship with each customer 210, need only maintain a single relationship to the network. This means that, rather than providing infrastructure for accepting payment from customers, delivering goods to customers, registering and authenticating customers, and providing customer service, the merchants may rely upon corresponding functionalities of the network. Further, rather than themselves maintaining a relationship with a charge processor 230, the merchants 220 can rely on the relationship with the charge processor maintained by the network 240. Participation in the network thus frees both customers and merchants of the substantial burdens of the conventional transaction model described above.

In accordance with the present invention, a new customer may visit the Web site of any merchant. When the user selects, on the merchant's Web site, a product or service (hereafter "item") for purchase, the network determines whether the customer is presently registered and authenticated with the network. If the customer is not presently registered, the network enables the customer to register with the network by providing identity and payment information. The identity information provided by the customer preferably includes a member identifier and a password for use with the network, as well as an electronic mail ("email") address. The payment information preferably includes a credit card number, or other information usable to charge the customer for purchases. As part of registration process, the network preferably verifies the provided payment information. At the conclusion of registration process, the registered customer is permitted to purchase the item. As a

result of the purchase, the purchased item is provided to the customer, and a transaction record is created that identifies the customer, the merchant, and the amount of the purchase. The visual user interfaces for these registration and purchase processes are preferably cobranded with the trademarks of the merchant and the operator of the network, to indicate that both parties are collaborating in providing the purchasing experience enjoyed by the customer.

After the customer has registered, the customer is effectively signed on to the network for a period of time, such as several hours. After registering, the customer may again sign on to the network by identifying, "or authenticating," himself or herself to the network by entering the member identifier and password. During the time that the customer is signed on, the customer may browse and purchase items from any Web site in the network without repeating the authentication process.

The network periodically reviews the unbilled purchase transaction records of each customer resulting from purchases made by the customer at any site. When the amounts of these records exceed a threshold value, preferably determined based upon the amount at which the transaction costs for the form of payment provided by the customer become reasonable, the network generates a payment request requesting payment of the total amount. The network then combines the payment requests generated for a number of users and transmits them to a payment processor for payment. The payment processor returns a settlement indication for each payment request indicating that the payment request has been settled or declined.

At this point, the merchants from whom the customer purchased the items are each credited with a portion of the corresponding purchase price, and the purchase transaction records represented by the payment request are marked as paid. In this manner, the network efficiently facilitates purchase transactions having relatively low purchase amounts using traditional forms of payment. The network further facilitates purchases having relatively low prices by providing centralized services for seeking refunds and managing subscriptions, and by providing multiple

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purchasing accounts linked to a single payment account. By providing these customer service functionalities to merchants, the network substantially lowers merchants' transaction processing costs, thereby enabling merchants to offer for sale modestly-priced goods.

In a further embodiment, during registration, the network permits the customer to provide a member identifier that is not unique among all of the customers of the network. In this embodiment, the network stores a unique identifier for the customer, along with the member identifier specified by the customer, in a cookie on the customer's computer system. When the customer subsequently authenticates by providing the member identifier, the network uses the member identifier to find the unique identifier on the customer's computer system, and uses the member identifier together with the unique identifier to authenticate the customer. In this way, the network allows customers to use non-unique member identifiers. This improves the customer experience for all customers, as it enables them to choose a particular member identifier without regard for its use by other customers. This is especially valuable where the network has a large number of customers. Facilitating non-unique member identifiers also permits the operator of the network to "absorb" or "import" existing groups of customers from other online services, where they already have member identifiers to which they are accustomed, and which may be redundant with the member identifiers of other customers of the network.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a relationship diagram showing the relationships arising between customers, merchants, and payment processors in accordance with the conventional transaction model.

Figure 2 is a relationship diagram showing the relationships defined for customers and merchants by the network.

Figure 3 is a high-level block diagram of the computer network environment in which the transaction network preferably operates.

Figure 4 is a high-level block diagram of a typical merchant computer system.

Figure 5 is a high-level block diagram of a typical customer computer system.

Figure 6 is a high-level block diagram of a typical network service center computer system.

Figure 7 is a screen shot diagram showing a Web page displayed by a merchant.

Figure 8 is a flow diagram showing the steps preferably performed by the network as part of the purchasing process.

Figure 9 is a flow diagram showing the steps preferably performed by the network in order to authenticate a customer.

Figure 10 is a screenshot diagram showing the sign on dialog preferably displayed by the network to collect the member identifier and password.

Figure 11 is a flow diagram showing the steps preferably performed by the network in order to register the customer with the network.

Figure 12 is a screenshot diagram showing a registration dialog 1200, into which the user enters personal and payment information.

Figure 13 is a screenshot diagram showing a confirmation dialog preferably displayed by the network in step 808.

Figure 14 is a screenshot diagram showing provision of a purchased item.

Figure 15 is a screenshot diagram showing a Web page of a second merchant.

Figure 16 is a screenshot diagram showing the confirmation dialog displayed in response to the customer's selection of link 1524.

Figure 17 is a screenshot diagram showing the provision of the additional purchased item.

Figure 18 is a table diagram showing the transaction database maintained by the network.

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Figure 19 is a flow diagram of the steps preferably performed by the network in order to aggregate the transaction records in the transaction database into authorizations sent to a payment processor.

Figure 20 is a flow diagram showing the steps preferably performed by the network in order to process a settlement report.

Figure 21 is a screenshot diagram showing a sample customer statement.

Figure 22 is a screenshot diagram showing a sample item information page.

Figure 23 is a screenshot diagram showing a sample refund request.

Figure 24 is a screenshot diagram showing a sample confirmation screen confirming a refund request.

Figure 25 is a screenshot diagram showing a sample statement reflecting the submission of a refund request.

Figure 26 is a screenshot diagram showing a sample subscription management page.

Figure 27 is a screenshot diagram showing a sample subscription information page.

Figure 28 is a screenshot diagram showing a sample registration page for registering an additional purchasing account for an existing payment account.

Figure 29 is a screenshot diagram showing a sample customer statement showing purchases made with the additional purchasing account.

Figure 30 is a screenshot diagram showing a sample customer statement showing purchases made with multiple purchasing accounts that are each associated with the same payment account.

DETAILED DESCRIPTION OF THE INVENTION

The present invention provides a new type of transaction network ("the network") for facilitating purchase transactions between any number of customers and any number of merchants participating in the network. The network is well-

suited to the purchase of low-priced "digital goods," as well as the purchase of other products and services, especially those having relatively low prices, and enables customer to use traditional forms of payment, such as credit cards. The network relieves merchants of the burdens of each maintaining a separate infrastructure for authenticating and accepting payment from customers, delivering goods, and providing customer service. The network further provides a single registration process during which the customer provides credit card payment information once for all of the merchants, as well as universal authentication to the Web sites of all of the merchants through a single user interaction. The network yet further facilitates the migration of large existing groups of users from other authentication systems, such as those of merchants, to the authentication system provided by the network. The network additionally preferably provides customers with centralized, automated services for customer account management, product refunds, subscription management, and multiple purchasing accounts linked to the same payment account.

Figure 2 is a relationship diagram showing the relationships defined for customers and merchants by the network. It can be seen that each customer 210, rather than maintaining a separate purchasing relationship with each merchant 220, need only maintain a single purchasing relationship with the network 240. This means that the customer need only provide payment information to register and authenticate the network, not to each merchant. Similarly, each merchant 220, rather than maintaining a relationship with each customer 210, need only maintain a single relationship to the network. This means that, rather than providing infrastructure for accepting payment from customers, delivering goods to customers, registering and authenticating customers, and providing customer service, the merchants may relay upon corresponding functionalities of the network. Further, rather than themselves maintaining a relationship with a charge processor 230, the merchants 220 can rely on the relationship with the charge processor maintained by the network 240. Participation in the network thus frees both customers and merchants of the substantial burdens of the conventional transaction model described above.

In accordance with the present invention, a new customer may visit the Web site of any merchant. When the user selects, on the merchant's Web site, a product or service (hereafter "item") for purchase, the network determines whether the customer is presently registered and authenticated with the network. If the customer is not presently registered, the network enables the customer to register with the network by providing identity and payment information. The identity information provided by the customer preferably includes a member identifier and a password for use with the network, as well as an electronic mail ("email") address. The payment information preferably includes a credit card number, or other information usable to charge the customer for purchases. As part of registration process, the network preferably verifies the provided payment information. At the conclusion of registration process, the registered customer is permitted to purchase the item. As a result of the purchase, the purchased item is provided to the customer, and a transaction record is created that identifies the customer, the merchant, and the amount of the purchase. The visual user interfaces for these registration and purchase processes are preferably cobranded with the trademarks of the merchant and the operator of the network, to indicate that both parties are collaborating in providing the purchasing experience enjoyed by the user.

After the customer has registered, the customer is effectively signed on to the network for a period of time, such as several hours. After registering, the customer may again sign on to the network by identifying, "or authenticating," himself or herself to the network by entering the member identifier and password. During this time that the customer is signed on, the customer may browse and purchase items from any Web site in the network without repeating the authentication process.

The network periodically reviews the unbilled purchase transaction records of each customer resulting from purchases made by the customer at any site. When the amounts of these records exceed a threshold value, preferably determined based upon the amount at which the transaction costs for the form of payment provided by the customer become reasonable, the network generates a payment

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request requesting payment of the total amount. The network then combines the payment requests generated for a number of users and transmits them to a payment processor for payment. The payment processor returns a settlement indication for each payment request indicating that the payment request has been settled or declined.

At this point, the merchants from whom the customer purchased the items are each credited with a portion of the corresponding purchase price, and the purchase transaction records represented by the payment request are marked as paid. In this manner, the network efficiently facilitates purchase transactions having relatively low purchase amounts using traditional forms of payment. The network further facilitates purchases having relatively low prices by providing centralized services for seeking refunds and managing subscriptions, and by providing multiple purchasing accounts linked to a single payment account. By providing these customer service functionalities to merchants, the network lowers their transaction processing cost substantially, thereby enabling merchants to offer for sale modestly-priced goods.

In a further embodiment, during registration, the network permits the customer to provide a member identifier that is not unique among all of the customers of the network. In this embodiment, the network stores a unique identifier for the customer, along with the member identifier specified by the customer, in a cookie on the customer's computer system. When the customer subsequently authenticates by providing the member identifier, the network uses the member identifier to find the unique identifier on the customer's computer system, and uses the member identifier together with the unique identifier to authenticate the customer. In this way, the network allows customers to use non-unique member identifiers. This improves the customer experience for all customers, as it enables them to choose a particular member identifier without regard for its use by other customers. This is especially valuable where the network has a large number of customers. Facilitating non-unique member identifiers also permits the operator of the network to "absorb" or "import" existing groups of customers from other online services, where they already have

member identifiers to which they are accustomed, and which may be redundant with the member identifiers of other customers of the network.

Figure 3 is a high-level block diagram of the computer network environment in which the transaction network preferably operates. Merchant computer systems 310 are computer systems operated by or on behalf of merchants that make items available for purchase by customers of the network. Merchant computer systems 310 preferably each provide a Web server that serves Web pages, some of which offer items for sale. The merchant computer systems 310 are connected to customer computer systems 330 via a network 320, such as the Internet. The customer computer systems 330 are usable by customers to browse the Web pages served by the merchant computer systems 310. When doing such browsing, a customer may use a customer computer system 330 to purchase an item offered for sale. Such purchase is communicated over the network 320 to a network service center computer system, which makes a record of the transaction. The network service center computer system 340 periodically collects together transactions entered into by each user, aggregates them into requests for payment, and forwards these payment requests over a secure network 350 to a payment processor computer system 360 for payment. The configurations of several of the computer systems shown in Figure 3 are discussed below in conjunction with Figures 4-6. While the network is preferably implemented on computer systems configured in this manner, those skilled in the art will recognize that the network may be advantageously implemented on combinations of computer systems other than those shown in these figures.

Figure 4 is a high-level block diagram of a typical merchant computer system. The merchant computer system 310 includes one or more central processing units ("CPUs") 410, and a network connection 420 for connecting to the network 320. The merchant computer system further comprises computer storage 430, which may include both transient storage devices, such as random access memory, and persistent storage devices, such as hard drives. The storage preferably includes an HTTP server program 431 for serving Web pages 432 offering items for sale. The storage preferably also includes: a product database 433 for storing items offered for sale; a

transaction engine 434 provided by the operator of the network to conduct the sale and delivery of items to authenticated customers and an authorization subsystem program 435, provided by the operator of the network to manage authorization of customers to the merchant Web site. The merchant computer system further includes a computer-readable media drive 440, which can be used to install software products, including the network, which are provided on a removable computer-readable medium, such as a CD-ROM or a DVD.

Figure 5 is a high-level block diagram of a typical customer computer system. The customer computer system 330 has one or more CPUs 510 and a network connection 520. The customer computer system further has a visual display 530, such as a video monitor for displaying Web pages, a keyboard 540 for inputting text, and a pointing device 550, such as a mouse, for selecting positions on the display. The customer computer system further includes transient and/or persistent storage 560 containing a Web browser program 561 for displaying and interacting with Web pages, and a cookie file 562 containing information stored on the customer computer system by Web servers and/or the network.

Figure 6 is a high-level block diagram of a typical network service center computer system. The network service center computer system 340 has one or more CPUs 610, a network connection 620, and a computer readable media drive 630. The network service center computer system further includes transient and/or persistent storage 640 containing network service center software 641 for managing the record keeping associated with purchase transactions, an HTTP server 642 for serving Web pages, a customer database 643 for maintaining information on each customer of the network, a merchant database 644 for maintaining information about each merchant, and a transaction database 645 for maintaining information about transactions entered into between customers and merchants. While these tables, described in greater detail below, are each conceptually single tables, they may each be implemented using more than one table, or a combination of data structures of different types.

To more clearly illustrate the operation of the network, its operation is described herein in conjunction with an example of its use by a customer. Figure 7 is a screen shot diagram showing a Web page displayed by a merchant. The Web page 700 includes information about the merchant, including information about products 711-714 that are offered for sale by the merchant. The information about each item includes a link that may be activated by the customer. For example, link 711 may be activated by the customer to purchase the item "20 Questions on XML." When the customer does so, the customer initiates the purchasing process.

Figure 8 is a flow diagram showing the steps preferably performed by the network as part of the purchasing process. These steps are preferably performed by network service center software executing on the network service center computer system and a transaction engine executing on the merchant computer system in conjunction with the Web browser executing on a customer computer system. Those skilled in the art will recognize, however, that these steps, as well as the other steps shown in flow diagrams herein, may also be distributed to other computer programs executing on other computer systems in accordance with alternate network configurations.

In step 801, the network determines whether a valid session cookie is stored on the customer computer system in its cookie file 562. If so, this indicates that the customer computer system is being used by a registered customer who has already signed on to the network, and the network continues in step 807. Otherwise, no registered user is currently signed onto the network from the customer computer system, and the network continues in step 802. Step 801 is preferably performed by examining time stamps in any network session cookies previously stored on the customer computer system by the network. These time stamps reflect the last time the customer signed on and the last time the customer made a purchase. The amount of time elapsed between these times stored in the cookie and the present time indicates whether each session cookie is presently valid. For example, the network may determine that a cookie indicating that the customer signed on less than six hours

ago and completed his or her last purchase less than two hours ago is still signed onto the network, and that a network session cookie bearing those time stamps is valid.

In step 802, if the customer is already registered with the network, the network permits the customer to sign on, and continues in step 803. If not, the network allows the user to register with the network, and continues in step 804. In step 803, the network authenticates the customer based on information provided by the customer as part of a sign on process. Figure 9 is a flow diagram showing the steps preferably performed by the network in order to authenticate a customer. In step 901, the network collects from the customer the customer's member identifier and password. Figure 10 is a screenshot diagram showing the sign on dialog box preferably displayed by the network to collect the member identifier and password. The sign on dialog box 1000 includes a member identifier field 1001 and a password field 1002, into which the customer may type his or her member identifier and password, respectively. The user then selects the sign on button 1003 to submit this information.

In step 902, the network also reads a customer cookie stored on the customer computer system for the collected member identifier. In step 903, the network extracts from the read customer cookie a unique identifier for the user stored in the customer cookie by the network. In one preferred embodiment, this unique identifier is the user's email address, or other information specific to the domain of the user. In step 904, if the combination of the collected user name and the extracted unique identifier correspond to a customer entry in the customer database, then the network continues in step 905, else authentication fails. In step 905, if the collected password is the correct password for that customer entry in the customer database, then authentication succeeds, else authentication fails.

Returning to Figure 8, in step 804, the customer has elected to register with the network by activating the register link 1004 in the sign on dialog box 1000. Figure 11 is a flow diagram showing the steps preferably performed by the network in order to register the customer with the network. In step 1101, the network collects personal information about the customer, as well as payment information. The

payment information preferably specifies a credit card account, but may alternatively specify any method of payment selected by the operator of the network. The collection process is shown in Figure 12. Figure 12 is a screenshot diagram showing a registration dialog 1200, into which the user enters personal and payment information. The user preferably fills in a first name field 1201, a last name field 1202, a postal code field 1203, an email address field 1204, a credit card type field 1205, a credit card number field 1206, a credit card expiration date field 1207, a member ID field 1208, password fields 1209, and a shared secret field 1210. It should be noted that the member ID 1208 may be any member identifier selected by the user, and does not need to be unique across the network. After completing fields 1200 through 1210, the user activates the register button 1211 to submit the information.

Returning to Figure 11, in step 1102, the network verifies that the entered personal information is formatted correctly. For example, the network verifies that the zip code in the customer's address has the correct number of digits. If personal information formatting verification fails, the network preferably requests that the user input new, correctly-formatted personal information and repeats step 1102. In step 1103, the network verifies the entered payment information. In doing so, the network preferably determines whether the credit card number is valid, and whether the personal information collected matches the credit card number. As part of determining whether the credit card is valid and active, the network may further attempt to obtain authorization to charge a small amount to the credit card, to ensure that the credit card is active. The network may further utilize third party credit card verification or fraud detection services in performing step 1103. If verification of payment information fails, the network preferably requests that the user input new, valid payment information and repeats step 1103. In step 1104, the network creates an entry in the customer database for the customer containing the collected information. In step 1105, the network sends an email message to the customer announcing the customer's successful registration with the network. After step 1105, the steps conclude.

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Returning to Figure 8, after registering the customer, in step 805, the network stores on the customer system a customer cookie identifying the customer by user name and unique identifier (preferably email address). In step 806, the network stores on the customer computer system a network session cookie documenting customer authentication. The network session cookie preferably includes the date and time of authentication. In step 807, the network determines whether the item selected by the customer has already been purchased by the customer. If so, the network continues in step 811 to provide the purchased item without charging the customer again. Otherwise, the network continues in step 808. In step 808, the network confirms the purchase with the customer. Figure 13 is a screenshot diagram showing a confirmation dialog preferably displayed by the network in step 808. The confirmation dialog 1300 contains information 1301 about the purchase, including an identification of the item, the purchase amount, and the duration or expiration of the purchase. In order to complete the purchase, the customer activates the continue button 1302.

Returning to Figure 8, in step 809, the network generates a purchase transaction, which it adds to its transaction database 645. In step 810, the network updates the network session cookie stored on the customer computer system to reflect the present time as the time of the last purchase. In step 811, the network provides to the user the purchased item. After step 811, these steps conclude.

Figure 14 is a screenshot diagram showing provision of a purchased item. The Web page 1400 is the purchased item selected by activating link 711 on the merchant Web page, "20 Questions on XML." If the user leaves this Web page to continue browsing or turns off the customer computer system, the customer can revisit this purchased item during the duration of the purchase by again selecting its link from the merchant Web page. In response, the network immediately provides the purchased item without further interaction by the customer once the user is authenticated by the network.

After the customer is authenticated, the customer may complete additional purchases on the same or different merchant Web pages without

reauthenticating. Figure 15 is a screenshot diagram showing a Web page of a second merchant. The Web page 1500 lists items 1501-1526 available for purchase. The user may select link 1524 in order to select a market report item titled "Electrical Power Systems FY 98." After selection of this link, a confirmation dialog is immediately displayed without requiring the user to perform any authentication interactions.

Figure 16 is a screenshot diagram showing the confirmation dialog displayed in response to the customer's activation of link 1524. Once the confirmation dialog box 1600 is displayed, the user need only select the continue button 1601 in order to complete the purchase of this additional item. After selecting this button, the "Electrical Power Systems FY 98" report is displayed. Figure 17 is a screenshot diagram showing the provision of the additional purchased item. Web page 1700 contains the purchased "Electrical Power Systems FY 98" item.

As a result of each purchase transaction, the transaction engine creates a transaction record documenting the transaction, which is stored by the transaction engine at the merchant site. Periodically, a polling agent within the network service center software polls the transaction engine at each merchant site to retrieve any transaction records generated on that merchant's site. The polling agent, upon retrieving these transactions, stores them each as a row in a transaction database maintained by the network. The transaction records are preferably aggregated by the network periodically into payment requests, which are requests to a payment processor to charge the customer's credit card or other form of payment. Figure 18 is a table diagram showing the transaction database maintained by the network. While the transaction table is shown for clarity as a single database table containing plain text, it will be appreciated by those skilled in the art that it may be advantageously implemented in a more heavily encoded and optimized form using conventional database techniques.

In the transaction table 1800, each row represents a transaction. Each row preferably contains data in at least six columns: a customer column 1801, a merchant column 1802, an item column 1803, an amount column 1804, an expiration

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column 1805, and an outstanding column 1806. The customer column preferably contains the member ID of the customer that entered into the transaction. For example, row 1812 contains the member identifier "Joe User." The merchant column identifies the merchant with which the customer entered into the transaction. For example, row 1812 lists the merchant "Content Partner." The item column 1803 preferably identifies the purchased item. For example, in row 1812, the item is the "Twenty Questions on XML" item. The price column 1804 preferably contains the amount of the purchased item. For example, in row 1812, the price is "US$ 2.50". The expiration column 1805 preferably contains the time at which the purchase expires. For example, for row 1812, the purchase expires at 2:25 p.m. on November 3, 1998. Finally, the outstanding column 1812 indicates whether the customer has yet paid for the purchase. For example, in row 1812, the customer has not yet paid for the purchase, so the transaction is still outstanding.

Figure 19 is a flow diagram of the steps preferably performed by the network in order to aggregate the transaction records in the transaction database into payment requests sent to a payment processor. The transactions are preferably aggregated monthly on each customer's monthly billing anniversary, but may be aggregated on any other desired schedule. In steps 1901-1907, the network loops through each of a plurality of groups of customers. In a preferred embodiment, there is a separate group of customers for each day of the month, and the loop of steps 1901-1907 is iterated once per day. In steps 1902-1905, the network loops through each customer in the group. In step 1903, the network determines the sum of the outstanding transactions of the customer. For example, for customer "Joe User" the network would add the amounts of rows 1812 and 1813, "US$ 2.50" and "US$ 1.00", to determine the sum of US$ 3.50. In step 1904, if the sum is greater than a billing threshold, such as US$ 4, then the network continues in step 1905, else the network continues in step 1906. In step 1905, the network generates a payment request for the determined sum against the credit card, or other form of payment, of the customer. In a preferred embodiment, the generated payment request has two parts: an authorization request, and a settlement request. The authorization request requests

the authority to charge the amount, while the settlement request requests actual payment of the amount. In step 1906, if additional customers remain for processing, the network loops to step 1902 to process the next customer in the group. In step 1907, the network transmits the payment requests generated in step 1905 to a payment processor in a batch. In step 1908, each day, the network loops back to step 1901 to process the next group of customers.

Generally, for each batch of payment requests transmitted to the payment processor, a payment report is received back from the payment processor indicating whether each of the payment requests was paid. Figure 20 is a flow diagram showing the steps preferably performed by the network in order to process a payment report. In step 2001, the network receives the payment report from the payment processor. In steps 2002-2007, the network loops through each payment indication in the payment report. Each payment indication generally corresponds to a different one of the payment requests included in the batch. In step 2003, if the payment indication indicates that the corresponding authorization was paid by the payment processor, then the network continues in step 2005, else the network continues in step 2004. In step 2004, the network, through inaction, permits the constituent transaction records to remain outstanding. The network may also take further steps (not shown) to immediately resubmit the payment requests, or to cancel the account of the customer. After step 2004, the network continues in step 2007. In step 2005, the network credits the accounts of the merchants of the constituent transactions in accordance with the business arrangement between the merchants and the operator of the network. For example, the merchant "Stat USA" may have an arrangement with the operator of the network in which the merchant receives ninety percent of the amount of each purchase. Thus, for transaction record 1813, the merchant "Stat USA" would be credited in the amount US$ 0.90. In step 2006, the network cancels the outstanding status of the constituent transaction records so that they will not be incorporated in any future payment requests. In step 1907, if additional payment indications remain in the payment report, the network loops back

to step 1902 to process the next payment indication. After step 2007, the steps conclude.

With respect to the steps shown in Figures 19 and 20 and discussed above, those skilled in the art will appreciate that, while these steps are directed primarily to forms of payment such as credit cards and check cards, these steps may be straightforwardly adapted to obtain payment from customers using different forms of payment.

In preferred embodiments, tasks relating to customer authentication and purchasing are allocated within the network as follows. Each item purchase link is preferably directed to a portion of the network called the transaction engine. A separate transaction engine is preferably located at each merchant site, so that, at any time that customers are able to access the merchant Web pages to initiate a purchase transaction, a version of the transaction engine is available to conduct the purchase transaction. The transaction engine reads and writes network session cookies. In order to do so, the transaction engines for all of the merchants are preferably registered within a single, central domain so that all of the transaction engines at all of the merchant sites may read and write the same cookies on the customer computer system. When an item purchase link is activated, the transaction engine checks for a valid network session cookie on the customer computer system, indicating that the customer has already been authenticated. If the transaction engine does not find a valid network session cookie, the transaction engine redirects processing to a customer information subsystem of the network. The customer information subsystem portion of the network performs authentication or registration for the customer, then instructs the transaction engine to confirm the transaction, generate a transaction record, write or refresh the network session cookie, and deliver the purchased item. To deliver the purchased item, in one embodiment, the transaction engine retrieves the data for the item from the merchant, and delivers the data for the item to the customer.

In another embodiment of the invention, in order to avoid the time and processing cost of relaying the data for the item through the transaction engine, rather

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than itself retrieving the data for the item, the transaction engine sends a request to the merchant computer system, through the customer computer system, to transmit the data for the item directly to the user. The request includes a "ticket"—an encrypted token attesting to the legitimacy of the request. At the merchant computer system, an authorization subsystem decrypts and verifies the ticket, creates a merchant session cookie that is similar to the network session cookie and that attests to the purchase and the authentication of the customer, and transmits the data for the item to the customer computer system.

Locating authorization subsystems at merchant computer systems also enables the network to manage customer authentication for merchants in their own domains. When a customer attempts to access a restricted portion of a merchant's Web site that is in a domain other than the central domain of the network, the authorization subsystem on the merchant computer system for that merchant checks to see whether a valid merchant cookie for that merchant is present on the customer computer system. Such a merchant cookie, if it is present on the customer computer system, attests to the current authentication of the user by the merchant. If a valid merchant cookie for that merchant is present on the customer computer system, the authorization subsystem allows access to the restricted portion of the merchant's Web site. If not, the authorization subsystem contacts the transaction engine. If the transaction engine finds a valid network session cookie on the customer machine—that is, a cookie attesting to the authentication of the customer in the central domain—it instructs the authorization subsystem to write a merchant session cookie and permit access to the restricted portion in the merchant's domain.

In a manner similar to the purchase process, if the transaction engine does not find a network session cookie on the customer machine, the transaction engine redirects processing to the customer information subsystem of the network. The customer information subsystem portion of the network performs authentication or registration for the customer, then instructs the transaction engine to create a network session cookie to the customer computer system. The transaction engine further instructs the authorization subsystem to write a merchant session cookie and

permit access to the restricted portion. In this way, the network provides a common method for signing onto the Web sites of all of the merchants, even those with restricted portions outside of the central network domain. Further, a customer may visit restricted areas of several different merchants, and is only required to sign on once.

In addition to some or all of the foregoing features, the network additionally preferably provides customers with centralized, automated services for account management, product refunds, subscription management, and multiple purchasing accounts linked to the same payment account.

Figures 21-25 illustrate the automated product refund service preferably provided by the network. Figure 21 is a screenshot diagram showing a sample customer statement. The statement 2100 contains entries, such as entries 2110 and 2120, each containing information about an item purchased by the customer named "Joe User." For example, entry 2120 in the statement contains information about the "Electrical Power Systems FX 98" report purchased from "Stat USA." The statement further includes the current balance 2130 for this account.

Each entry includes a link for displaying additional detail about the purchased item. For example, entry 2120 includes link 2121, which the user may activate to display additional information about the Stat USA report. Figure 22 is a screenshot diagram showing a sample item information page. The item information page 2200 includes information 2210 about the item. This information includes a link 2211 that can be activated to access the purchased item. The item information page also includes a button 2220 that can be activated to request a refund for the item. A customer may wish to request a refund, for example, if the item was ordered by mistake, if the item does not conform to the customer's expectations, or if the item could not be properly downloaded.

Figure 23 is a screenshot diagram showing a sample refund request. The refund request 2300 is displayed in response to the customer's activation of button 2340. The refund request contains information 2310 about the item for which a refund is sought, a listbox 2320 for specifying a reason for the refund request, and a

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field 2330 for entering a further explanation of the circumstances surrounding the request for refund. The refund request further contains a button 2340 that can be activated to submit the refund request. Figure 24 is a screenshot diagram showing a sample confirmation screen confirming a refund request. The confirmation screen 2400 is preferably displayed in response to the activation of button 2340.

After the refund request is submitted, the customer's statement is preferably updated to reflect the submission of the refund request. Figure 25 is a screenshot diagram showing a sample statement reflecting the submission of a refund request. The updated statement 2500 includes a line 2521 indicating that a refund has been requested for item 2520. Line 2521 further indicates that the price of item 2520, $1.00, is being deducted from the account balance while the refund request is being considered. As a result, the account balance 2530 is reduced to include only the price of item 2510.

In processing refund requests, the network preferably employs a maximum automatic refund threshold. If a refund request is directed to an item having a price that is less than the maximum automatic refund threshold, the network preferably automatically grants the refund request. On the other hand, the network applies a more rigorous evaluation process to refund requests that are directed to items having prices greater than the maximum automatic refund threshold. The network preferably forwards such refund requests to a human customer service representative. This use of a maximum automatic refund threshold reflects a recognition that evaluation by a human customer service representative may incur a significant cost that, in many cases, exceeds the cost of granting the refund. In a preferred embodiment, the maximum automatic refund threshold is set at $10.00. As a result, a customer may conveniently complete the submission of a refund request without interacting directly with a human customer service representative. Further, in most cases, the network relieves its operator of any need to expend customer service representative time to process refund requests.

Figures 26-27 illustrate the automated, centralized subscription management service preferably provided by the network. Figure 26 is a screenshot

diagram showing a sample subscription management page. The subscription management page 2600 contains entries, such as entries 2610 and 2620, each containing information about a subscription purchased by the customer named "Joe User." For example, entry 2610 in the subscription management page contains information about a subscription to the "Wall Street Journal." Each entry also includes an indication of the expiration date of the subscription, as well as an indication of whether the subscription will automatically renew when it expires.

Each entry includes a link for displaying information about or modifying the subscription. For example, entry 2610 includes link 2611, which the user may activate to display additional information about the Wall Street Journal subscription. Figure 27 is a screenshot diagram showing a sample subscription information page. The subscription information page 2700 includes information 2710 about the subscription. This information includes a link 2711 that can be activated to access the subscription. The item information page also includes buttons 2721-2723 for modifying the subscription. The user may activate button 2721 to immediately renew the subscription for another term. When button 2721 is activated, the network updates the subscription management and subscription information pages to extend the expiration date of the subscription by the length of a term, and notifies the transaction engine at the merchant site to update the status of the subscription. The user may activate button 2722 to specify that the subscription should automatically renew for another term when the present term expires. When button 2722 is activated, the network updates the subscription management and subscription information pages to indicate that the subscription will automatically renew, and notifies the transaction engine at the merchant site to update the status of the subscription. The user may activate button 2723 to cancel the subscription. When button 2722 is activated, the network preferably credits the customer's account for a pro-rated portion of the subscription price. The network further updates the subscription management page to remove the entry for this subscription, and notifies the transaction engine at the merchant site to update the status of the subscription.

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As a result, a customer may conveniently perform subscription management operations without interacting directly with a human customer service representative. Further, the network relieves its operator of any need to expend customer service representative time to process subscription management operations.

In order to facilitate purchasing by multiple customers who pay for purchases together, the network preferably provides a feature in which it associates multiple purchasing accounts with a single payment account. This feature enables a company to pay for and track the purchases of its employees, a parent to pay for and track the purchases of his or her children, or an individual to separate his or her business purchases from his or her personal purchases. In accordance with this feature, a first customer may register as described above, in order to obtain both a purchasing account for purchasing items, and a payment account for paying for those purchases. At a later time, the first customer may create additional purchasing accounts that are "associated" with the payment account, either for others, or for himself or herself. Any purchases made with an additional purchasing account are consumed using the additional purchasing account, and are billed to the associated payment account, using the payment information associated with this payment account.

Figures 28-30 illustrate the multiple purchasing accounts feature preferably provided by the network. In a preferred embodiment, an additional purchasing account can be added to an existing payment account by a customer signed on to an existing purchasing account associated with the payment account. Figure 28 is a screenshot diagram showing a sample registration page for registering an additional purchasing account for an existing payment account. In the example, the registration page shown is used by the customer named "Joe User" to add an additional purchasing account for "Jean User" to his existing payment account. The registration page contains fields 2810 into which the customer enters information about the customer that will use the additional purchasing account, including the email address of this customer, and the user name and password to be used with the

additional purchasing account. After entering this information, the customer activates button 2820 to register the additional purchasing account.

After the additional purchasing account has been registered, it may be used by Jean User to purchase items. Figure 29 is a screenshot diagram showing a sample customer statement showing purchases made with the additional purchasing account. The customer statement 2900 contains entries 2910 and 2920 for items purchased by Jean User using her purchasing account. The customer statement further contains a total 2930 of the items that Jean User has purchased. It should be noted that, in the preferred embodiment shown, items purchased using other purchasing accounts associated with the same payment account (*e.g.*, those purchased by Joe User using his purchase account, shown in Figure 21) are not shown on the customer statement or included in the total.

On the other hand, customers signed on to the payment account (or to the first purchasing account, which is preferably more tightly coupled to the payment account than are additional purchasing accounts) may display the purchases made using other customer accounts associated with the same payment account. Figure 30 is a screenshot diagram showing a sample customer statement showing purchases made with multiple purchasing accounts that are each associated with the same payment account. The customer statement 3000 includes both entries 3010 and 3020 describing purchases made by Joe User using his purchasing account, and entries 3030 and 3040 describing purchases made by Jean User using her purchasing account. Additionally, the customer statement shows a total 3050 that reflects the purchases made by both Joe User and Jean User. It can be seen that this statement permits a user of a payment account to review the purchases made using all of the purchasing accounts associated with the payment account, and to determine the amount that will requested in the next payment request generated by the network for the payment account.

While this invention has been shown and described with reference to preferred embodiments, it will be understood by those skilled in the art that various changes or modifications in form and detail may be made without departing from the

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scope of the invention. For example, instead of operating in conjunction with multiple merchants, the network may operate in conjunction with a single merchant. Further, the functionalities provided by the network may be allocated differently across the described computer systems, or may be provided by a different combination of computer systems than described. Further, these computer systems may be connected by a combination of different networks, instead of by a single network such as the Internet. The network may further be reconfigured to more optimally perform in particular business environments. Additionally, the network may be used to sell goods and services other than digital goods, including physical goods. Also, the network may preferably accept payment information and generate payment requests for any form of payment, or any combination of different forms of payment.

CLAIMS

We claim:

1. A method in a computer network for managing purchase transactions for the Web sites of a plurality of merchants using a transaction network, comprising the steps of:

for each of the plurality of merchant Web sites, under the control of the merchant Web site:

displaying items available for purchase, each item having a price;

receiving user input from users using Web clients selecting items for purchase; and

for each item selection, forwarding a purchase request to the transaction network indicating the price of the selected item;

under the control of the transaction network:

receiving transaction network purchase requests forwarded from the plurality of merchant Web sites;

for each received purchase request:

discerning the identity of the user; and

generating a pending transaction record indicating the identity of the user, the price of the selected item, and the identity of the forwarding Web site;

periodically determining, for each user whose identity is indicated by a pending transaction record, the sum of the prices of the pending transaction records indicating the identity of the user;

where the determined sum for a user exceeds a billing threshold, submitting to a payment processor a request for settlement for the determined sum against an account of the user;

receiving settlement indications from the payment processor each indicating payment of an identified submitted a request for settlement;

for each received settlement indication, for each transaction record whose price is included in the sum of the billing transaction identified by the received settlement indication:

crediting an account of the merchant identified by the transaction record; and

removing the pending status of the transaction record.

2. A method in one or more computer systems for procuring payment for purchase transactions each originating with a particular user and vendor, comprising the steps of:

receiving purchase requests each originating at one of a plurality of vendor Web sites, each purchase request indicating a purchase price;

for each received purchase request:

discerning the identity of a user with which the purchase request originated; and

storing a pending transaction record indicating the identity of the user, the purchase price, and the identity of the vendor at whose Web site the purchase request originated;

periodically determining, for each user whose identity is indicated by a pending transaction record, the sum of the prices of the pending transaction records indicating the identity of the user;

where the determined sum for a user exceeds a billing threshold, submitting to a payment processor a billing transaction for the determined sum against an account of the user;

receiving settlement indications from the payment processor each indicating payment of an identified submitted billing transaction;

for each received settlement indication, for each transaction record whose price is included in the sum of the billing transaction identified by the received settlement indication:

crediting an account of the vendor identified by the transaction record; and

removing the pending status of the transaction record.

3. One or more computer memories collectively containing a data structure for purchasing items from different vendors, the data structure comprising:

a first Web page, under the control of a first vendor, containing information describing a first item and a first link to a purchasing system not under the control of the first vendor, the first link activatable by users to purchase the first item;

a second Web page, under the control of a second vendor distinct from the first vendor, containing information describing a second item and a second link to the purchasing system, the purchasing system also not under the control of the second vendor, the second link activatable by users to purchase the second item;

instructions stored in a purchasing system, the instructions responding to the activation of the first link by:

identifying the user activating the first link;

establishing an account for the identified user if one has not yet been established;

causing the purchase of the first item to be posted to the account of the identified user; and

providing the first item to the identified user,

the instructions responding to the activation of the second link by:

identifying the user activating the second link;

establishing an account for the identified user if one has not yet been established;

causing the purchase of the second item to be posted to the account of the identified user; and

providing the second item to the identified user.

4. The computer memories of claim 3 wherein the instructions stored on the purchasing system are provided in an active server object.

5. A method in a computer system for generating payment requests incorporating multiple purchase transactions, comprising the steps of:

receiving purchase transaction indications, each purchase transaction indication indicating an amount and identifying one of a plurality of customers;

for each customer:

periodically determining the sum of the amounts of the received purchase transaction indications identifying the customer that have not been incorporated in a payment request; and

when the determined sum exceeds a billing threshold, generating a new payment request for the customer in the amount of the sum that incorporates the received purchase transaction indications identifying the customer that have not been incorporated in a payment request.

6. The method of claim 5 wherein the receiving step receives purchase transaction indications from a number of different vendors often whom the customers have made purchases.

7. The method of claim 6, further comprising the steps of:

for each vendor, collecting transaction indications indicating transactions entered into with the vendor; and

retrieving the collected transaction indications from each vendor.

8. The method of claim 5 wherein the generating step generates settlement requests, and wherein the method further comprises the step of transmitting generated settlement requests to a payment processor for settlement.

9. A computer-readable medium whose contents cause a computer system to generate billing transactions incorporating multiple purchase transactions by performing the steps of:

receiving purchase transaction indications, each purchase transaction indication indicating an amount and identifying one of a plurality of customers; and

for each customer:

periodically determining the sum of the amounts of the received purchase transaction indications identifying the customer that have not been incorporated in a billing transaction; and

when the determined sum exceeds a billing threshold, generating a new billing transaction for the customer in the amount of the sum that incorporates the received purchase transaction indications identifying the customer that have not been incorporated in a billing transaction.

10. The computer-readable medium of claim 9 wherein the receiving step receives purchase transaction indications from a number of different content providers with whom the customers have entered into purchase transactions.

11. A computer system for generating billing transactions incorporating multiple purchase transactions, comprising:

a receiver that receives purchase transaction indications, each purchase transaction indication indicating an amount and identifying one of a plurality of customers;

an adder that, for each customer, periodically determines the sum of the amounts of the received purchase transaction indications received by the receiver that identify the customer that have not been incorporated in a billing transaction; and

a billing transaction generator that, when the sum determined by the adder exceeds a billing threshold, generates a new billing transaction for the customer in

the amount of the sum that incorporates the received purchase transaction indications identifying the customer that have not been incorporated in a billing transaction.

12. A method in a computer system for aggregating charge transactions entered into by a customer, the method comprising the steps of:

over time, receiving a stream of charge transactions entered into by the customer, each charge transaction having an amount;

identifying a time at which the sum of the amounts of the received charge transactions exceeds a threshold amount; and

submitting to a payment processor a payment request for the sum of the received charge transactions.

13. The method of claim 12 wherein one of the received charge transactions was entered into in conjunction with a third-party vendor, further comprising the steps of:

receiving from the payment processor, in response to the submitting step, a settlement indication indicating payment of the submitted payment request; and

in response to the step of receiving a settlement indication, crediting to the vendor a portion of the sum.

14. A computer-readable medium whose contents cause a computer system to process charge transactions entered into by a customer by performing the steps of:

receiving a stream of charge transactions entered into by the customer, each charge transaction having an amount;

identifying a time at which the sum of the amounts of the received charge transactions exceeds a threshold amount; and

submitting to a payment processor a settlement request for the sum of the received charge transactions.

15. The computer-readable medium of claim 14 wherein one of the received charge transactions was entered into in conjunction with a third-party vendor, and wherein the contents of the computer-readable medium further cause the computer system to perform the steps of:

receiving from the payment processor, in response to the submitting step, a payment indication indicating payment of the submitted settlement request; and

in response to the receiving step, crediting to the vendor a portion of the sum.

16. A computer memory device storing a charge aggregation data structure for storing information about charge transactions directed to a particular form of payment, the form of payment having a minimum threshold for charges against the form of payment, the data structure comprising a plurality of records each representing a distinct charge transaction, each record indicating an amount for the transaction it represents, at least some of the records indicating amounts below the minimum threshold for the form of payment,

such that the data structure may be accessed to combine a plurality of the charge transactions into a single aggregate transaction having an amount corresponding to the combined amounts indicated by the records that is in excess of the minimum threshold, such that the aggregate transaction may be charged against the form of payment.

17. The computer memory device of claim 16 wherein the form of payment is a credit card.

18. The computer memory device of claim 16 wherein the form of payment is a debit card.

19. The computer memory device of claim 16 wherein the form of payment is an automated clearing house payment.

BNSDOCID: <WO _____0033221A1_IA>

20. The computer memory device of claim 16 wherein the form of payment is an electronic funds transfer transaction.

21. The computer memory device of claim 16 wherein the form of the payment is a purchase order.

22. The computer memory device of claim 16 wherein each record of the data structures identifies one of a plurality of customers as having entered into the transaction represented by the record,
such that the data structure may be accessed to combine a plurality of the charge transactions into a plurality single aggregate transactions each corresponding to a single customer.

23. A memory device storing an aggregate charge data structure, the aggregate charge data structure being suitable for submission to a payment processor for payment, the data structure comprising:
a consumer identifier identifying a consumer that has charged a multiplicity of purchase transactions, each purchase transaction having an amount; and
an aggregate charged amount constituting the sum of the amounts of a constituent plurality of the multiplicity of purchase transactions charged by the consumer, at least one of the amounts of the constituent purchase transactions falling below a minimum threshold for submitting charges to a payment processor for payment, such that the data structure may be submitted to a payment processor for payment in place of the constituent purchase transactions.

24. The memory device of claim 23 wherein the data structure further comprises both a consumer identifier and aggregate charged amount for each of a plurality of additional consumers.

25. A method in a computer system for identifying a user using a user computer system among a group of users, the method using a potentially non-unique member identifier, the method comprising the steps of:

(a) registering the user by:

(1) obtaining for the user a member identifier that is potentially not unique;

(2) after obtaining the solicited member identifier in step (a)(1), storing a unique identifier for the user on the user computer system in conjunction with the obtained member identifier; and

(b) identifying the user by:

(1) soliciting from the user the member identifier of the user;

(2) receiving from the user, in response to step (b)(1), the member identifier of the user;

(3) reading from the user computer system the unique identifier stored in conjunction with the member identifier received in step (b)(2);

(4) identifying the user using the unique identifier read in step (b)(3).

26. The method of claim 25 wherein a plurality of users having the same user computer system are registered by repeating steps (a)(1)-(a)(2) for each of the plurality of users.

27. The method of claim 25 wherein obtaining step (a)(1) comprises the steps of:

soliciting from the user a member identifier of the user; and

receiving from the user a member identifier of the user.

28. The method of claim 25 wherein the method is practiced on behalf of a first online service, and wherein obtaining step (a)(1) comprises the step of

obtaining for the user a member identifier used by the user to identify himself or herself to second online service distinct from the first online service.

29. The method of claim 28 wherein the step of obtaining for the user a member identifier used by the user to identify himself or herself to second online service obtains the member identifier from an operator of the second online service.

30. A method in one or more computer systems for purchasing products offered for sale by multiple vendors, comprising the steps of:

receiving a single, contiguous set of user interface interactions for establishing the identity of the user;

establishing the identity of the user based on the single, contiguous set of user interface interactions received in the receiving step;

purchasing an item offered for sale by a first vendor based on the user identity established in the establishing step; and

purchasing an item offered for sale by a second vendor distinct from the first vendor based on the user identity established in the establishing step.

31. The method of claim 30, further comprising the steps of:

in conjunction with the step of purchasing an item offered for sale by a first vendor, displaying a visual indication of the first vendor; and

in conjunction with the steps of purchasing an item offered for sale by a second vendor, displaying a visual indication of the second vendor.

32. The method of claim 30 wherein the receiving and establishing steps are performed as part of the step of purchasing an item offered for sale by the first vendor.

33. The method of claim 30 wherein the second vendor has a computer system, and wherein the establishing step includes the step of storing a central

BNSDOCID: <WO_____0033221A1_IA>

state signifying the establishment of the identity of the user, and wherein the step of purchasing an item offered for sale by the second vendor include the steps of:

checking the stored state;

in response to checking the stored state, sending an encoded ticket to the second computer system;

under the control of the second computer system:

decoding the encoded ticket;

validating the decoded ticket; and

performing the step of purchasing an item offered for sale by the second vendor in response to the validating step.

34. The method of claim 30 wherein the establishing step includes the step of storing a central state signifying the establishment of the identity of the user, and wherein the step of purchasing an item offered for sale by a second vendor include the steps of:

checking the stored central state; and

performing the step of purchasing an item offered for sale by a second vendor in response to the checking step.

35. A method in one or more computer systems for accessing multiple access-restricted Web sites, comprising the steps of:

receiving a single, contiguous set of user interface interactions for establishing the identity of the user;

establishing the identity of the user based on the single, contiguous set of user interface interactions received in the receiving step;

granting access to a first access-restricted Web site based on the user identity established in the establishing step; and

granting access to a second access-restricted Web site distinct from the second access-restricted Web site based on the user identity established in the establishing step.

36. The method of claim 35, wherein the second access-restricted Web site is served by a second computer system, and wherein the establishing step includes the step of storing a state signifying the establishment of the identity of the user, and wherein the step of granting access to the second access-restricted Web site include the steps of:

checking the stored state;

in response to checking the stored state, sending an encoded ticket to the second computer system;

under the control of the second computer system:

decoding the encoded ticket;

validating the decoded ticket; and

performing the step of granting access to the second access-restricted Web site in response to the validating step.

37. The method of claim 35 wherein the establishing step includes the step of storing a central state signifying the establishment of the identity of the user, and wherein the step of granting access to the second access-restricted Web site include the steps of:

checking the stored central state; and

performing the step of granting access to the second access-restricted Web site in response to the checking step.

38. A transaction network for vending digital content from a plurality of merchants comprising:

for each merchant, a transaction engine for conducting transactions with customers to purchase digital content and deliver purchased digital content; and

a network service center for collecting indicia of transactions entered into with each merchant and submitting payment requests for the collected transactions to a payment processor.

39. The transaction network of claim 38 wherein the network service center aggregates the transactions conducted with each customer, and wherein the payment requests are submitted for the aggregated transactions.

40. The transaction network of 39 wherein the network service center further receives from the payment processor indications of the payment of the submitted payment requests, and, for each received indication, credits the merchants with which the transactions aggregated into the request where conducted.

41. A method in one or more computer systems for providing to a customer automatic refund support for a purchase transaction, the method comprising:

generating for the customer a display soliciting information supporting a request for refund of the purchase transaction;

receiving from the customer, in response to the generated display, information supporting a request for refund; and

automatically generating a request for refund incorporating the received information,

such that the customer requests a refund of the purchase transaction without additional interaction.

42. The method of claim 41, further comprising the steps of:

generating for the customer a display containing indicators of each of a plurality of transactions entered into by the customer, at least two of the plurality of transaction being entered into with different merchants; and

receiving from the customer a selection of the transaction indication of a selected transaction,

and wherein the step of generating a display soliciting information to support a request for refund of a service transaction generates a display soliciting information to support a request for refund of the selected transaction.

43. The method of claim 41 wherein the transaction has an amount, the method further comprising the steps of:

determining whether the amount of the transaction is less than a maximum threshold; and

if the amount of the transaction is less than the maximum threshold, automatically granting the requests for refund.

44. The method of claim 43, further comprising the step of, if the amount of the transaction is not less than the maximum threshold, determining whether to grant the request for refund based upon the information supporting the request for refund.

45. A method in one or more computer systems for enabling a subscriber to manage content subscriptions from a plurality of content sources, the method comprising:

displaying for the subscriber an indication of each of a plurality of content subscriptions entered into by the subscriber, at least two of the content subscriptions being with different content sources;

receiving from the subscriber a selection of the indication of a selected content subscription; and

on behalf of the subscriber, performing a subscription management operation with respect to the selected content subscription.

46. The method of claim 45 wherein the performing step cancels the selected content subscription.

47. The method of claim 45 wherein the performing step renews the selected content subscription.

48. A method in one or more computer systems for providing a plurality of purchasing accounts for purchasing digital content, all of the purchasing accounts of the plurality being associated with a single payment account, the method comprising:

storing payment information for the payment account that is usable to procure payment for digital content purchases made using any of the plurality of purchasing accounts;

storing for each of the purchasing accounts a different account identifier;

in response to each purchase request specifying content received in connection with the account identifier of one of the purchasing accounts:

completing a purchase of the specified content, and

providing the specified content; and

utilizing the payment information stored for the payment account to procure payment for digital content purchases completed using any of the plurality of purchasing accounts.

49. The method of claim 48, further comprising the steps of:

storing an account identifier for the payment account; and

in response to a request received in connection with the account identifier for the payment account, displaying information describing the purchases completed using any of the plurality of purchasing accounts.

50. The method of claim 48, further comprising the step of, in response to a request received in connection with the account identifier for a selected one of the purchasing accounts, displaying information describing the purchases made completed using only the selected purchasing account.

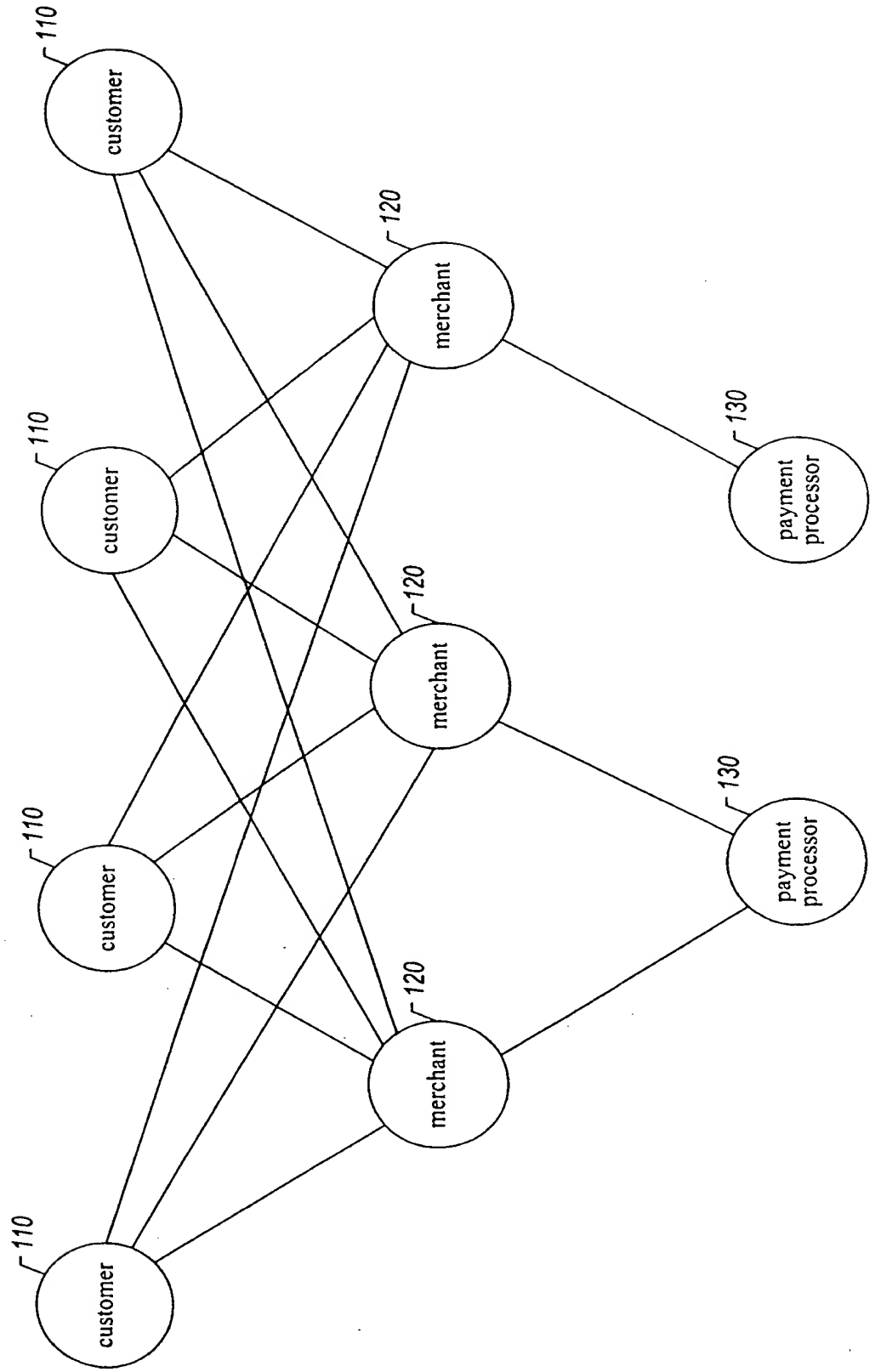

Fig. 1

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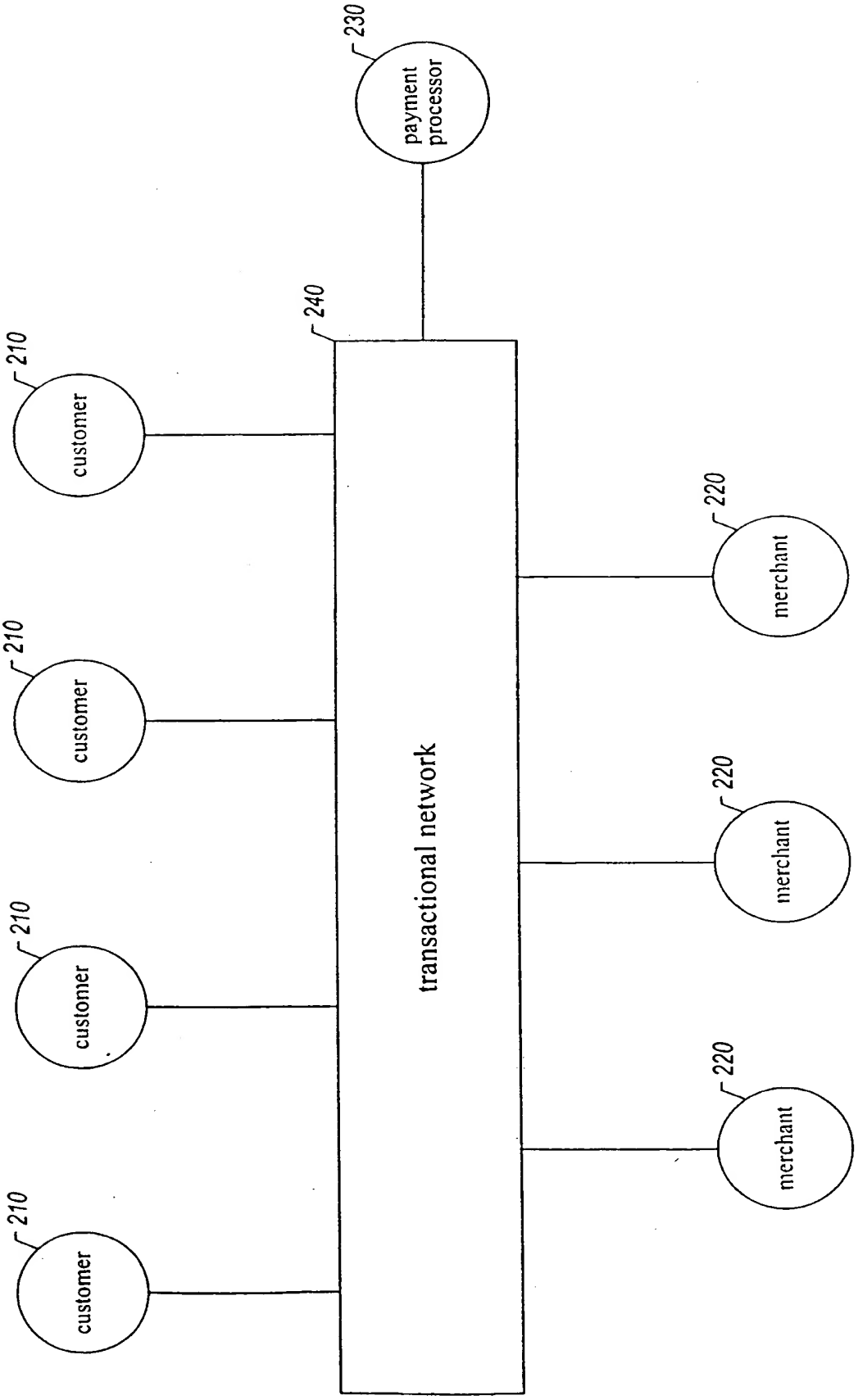

Fig. 2

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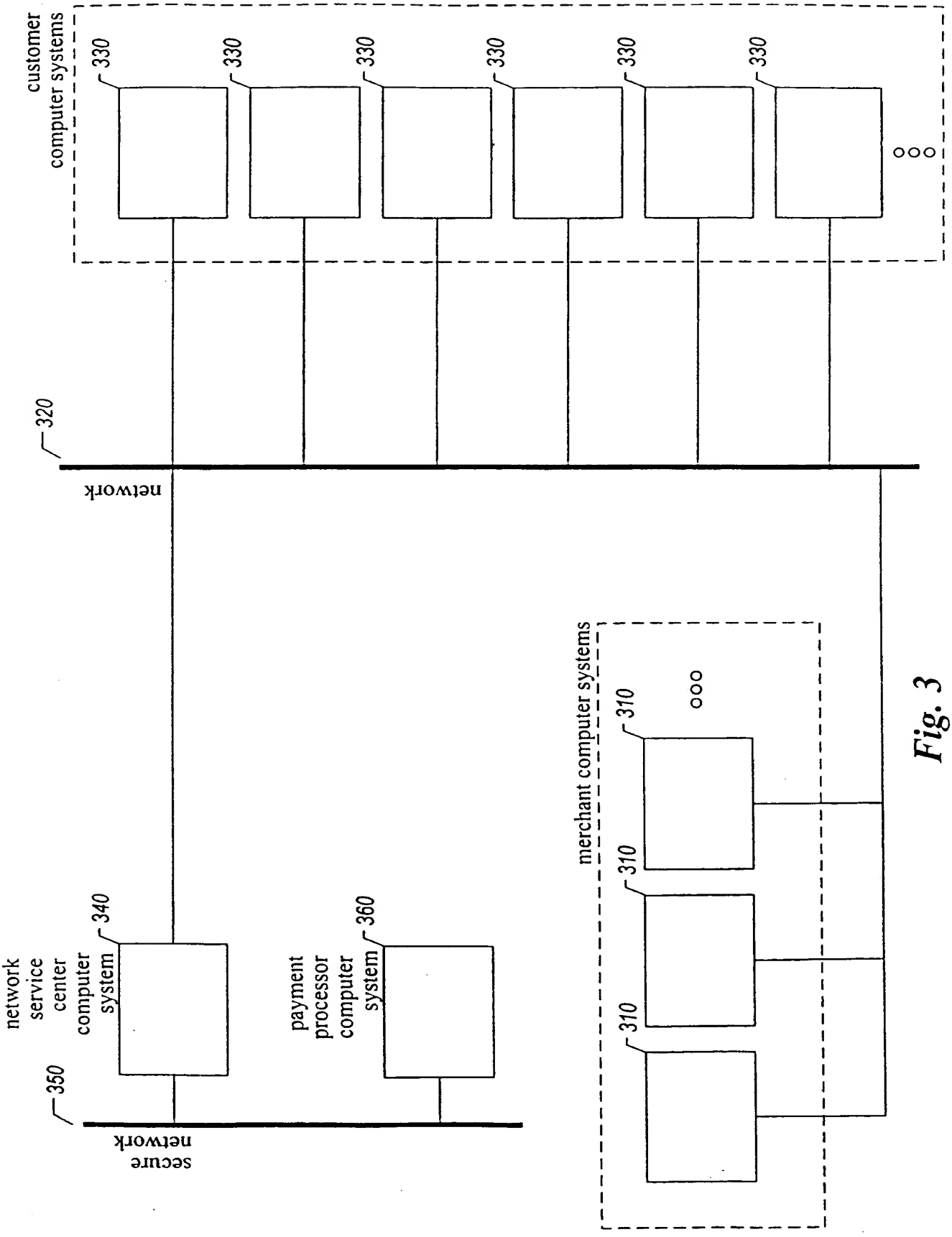

Fig. 3

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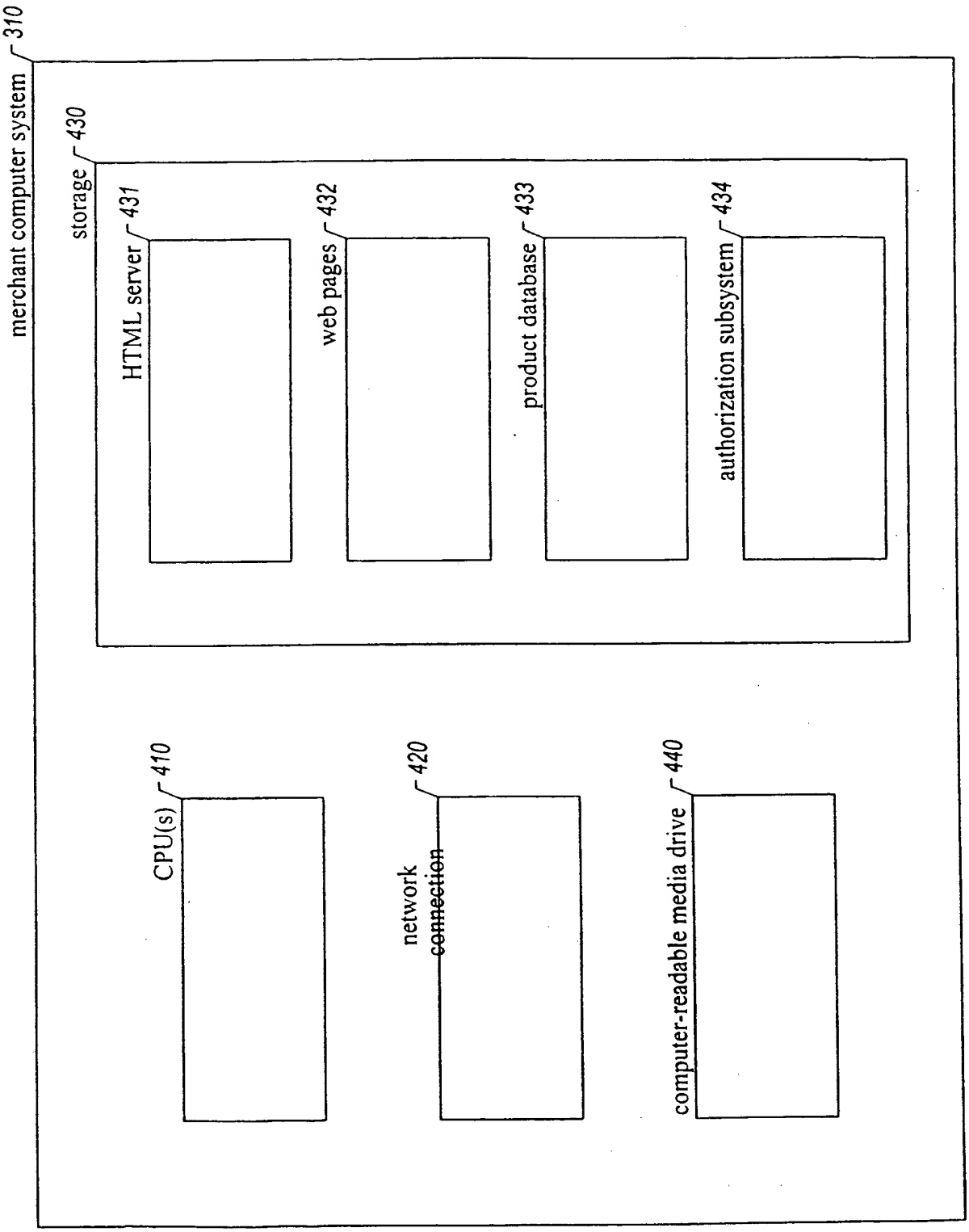

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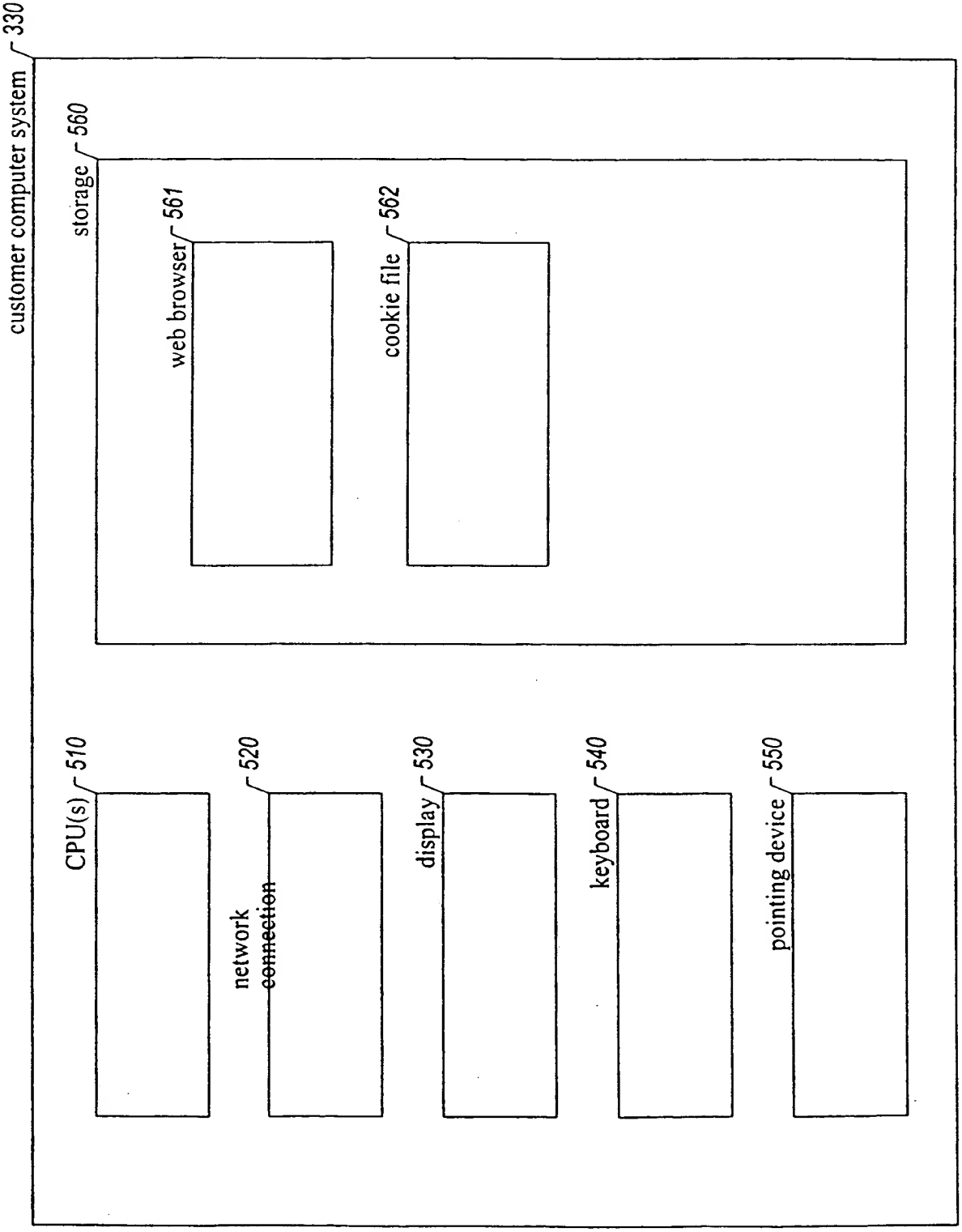

Fig. 5

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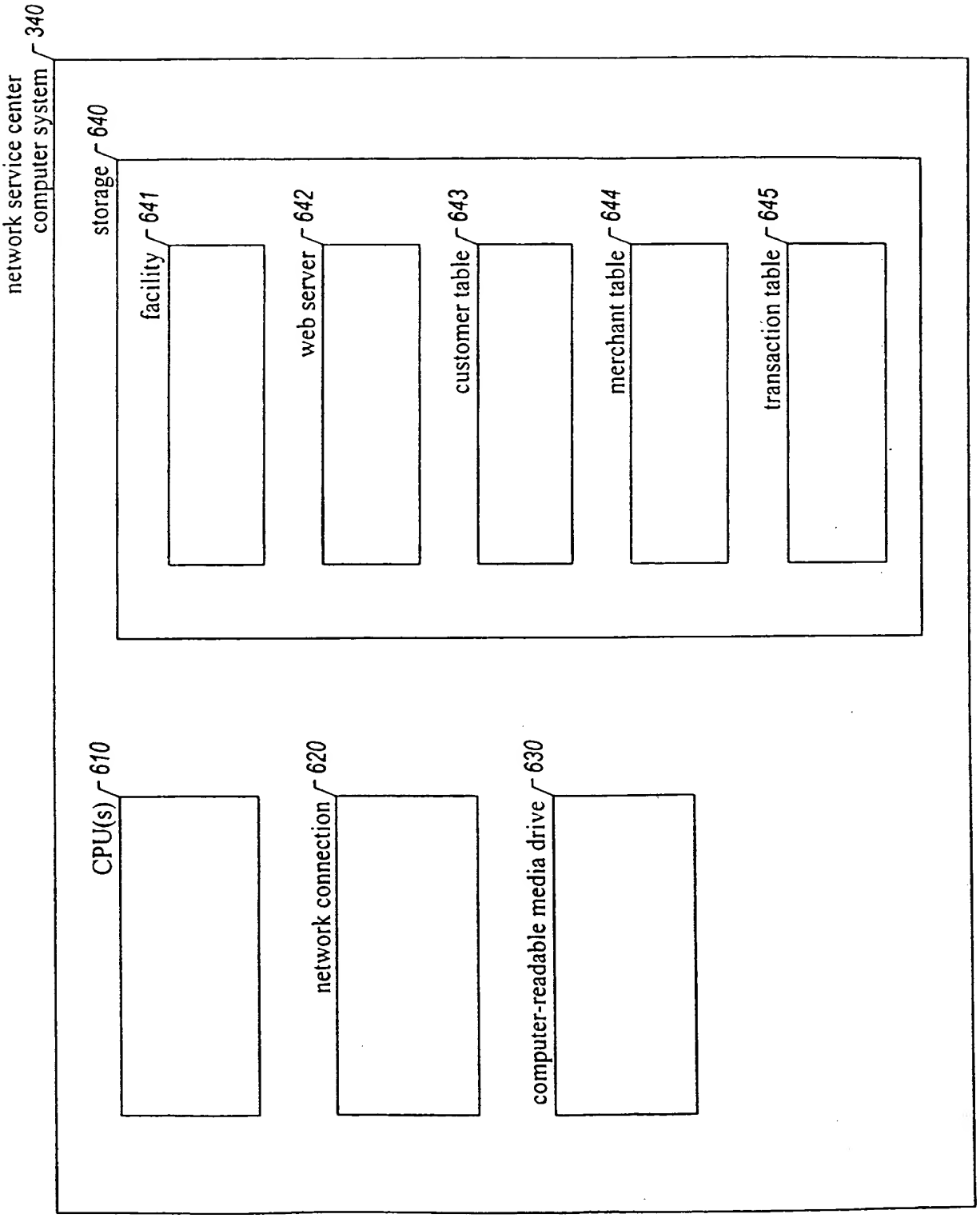

Fig. 6

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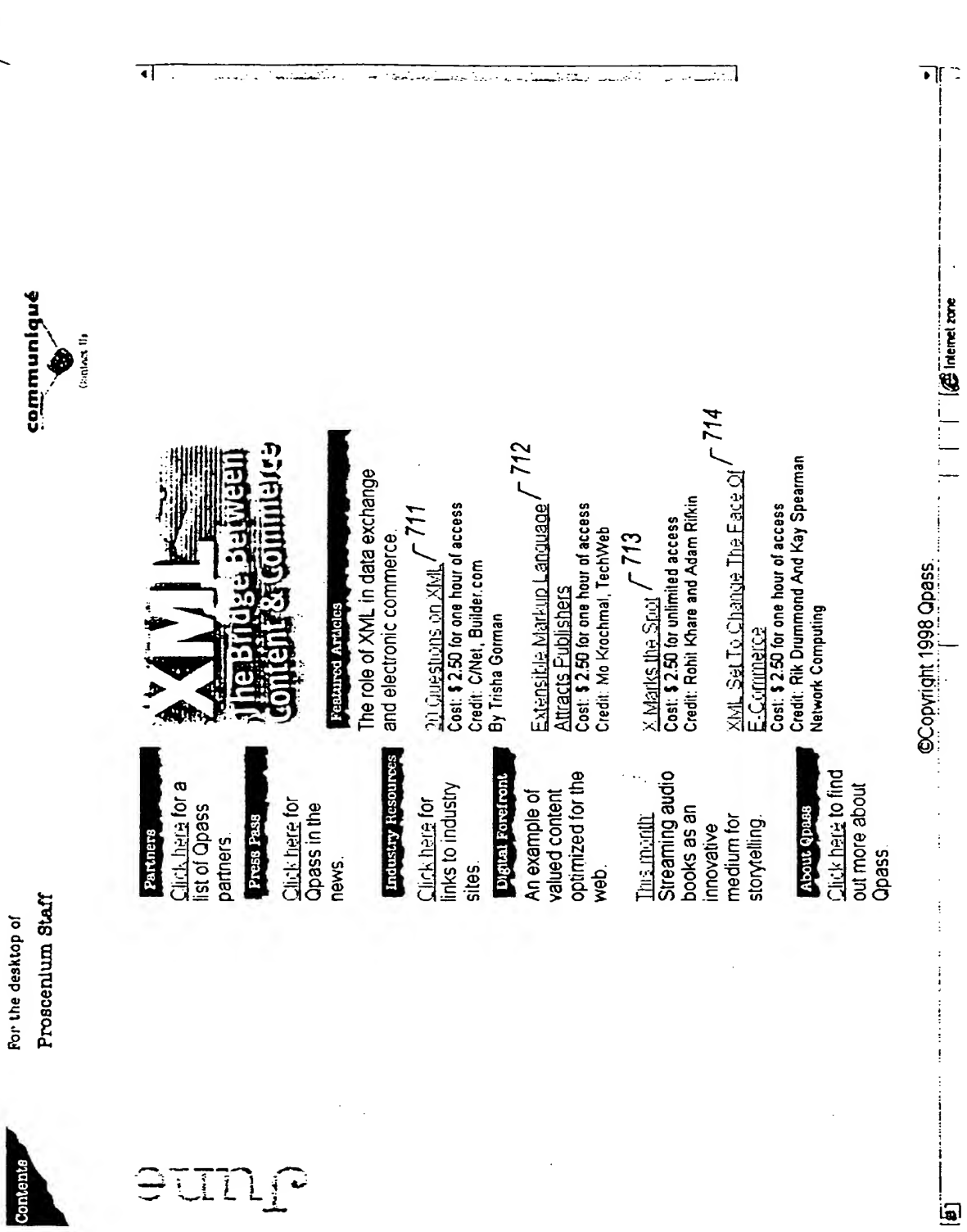

Fig. 7

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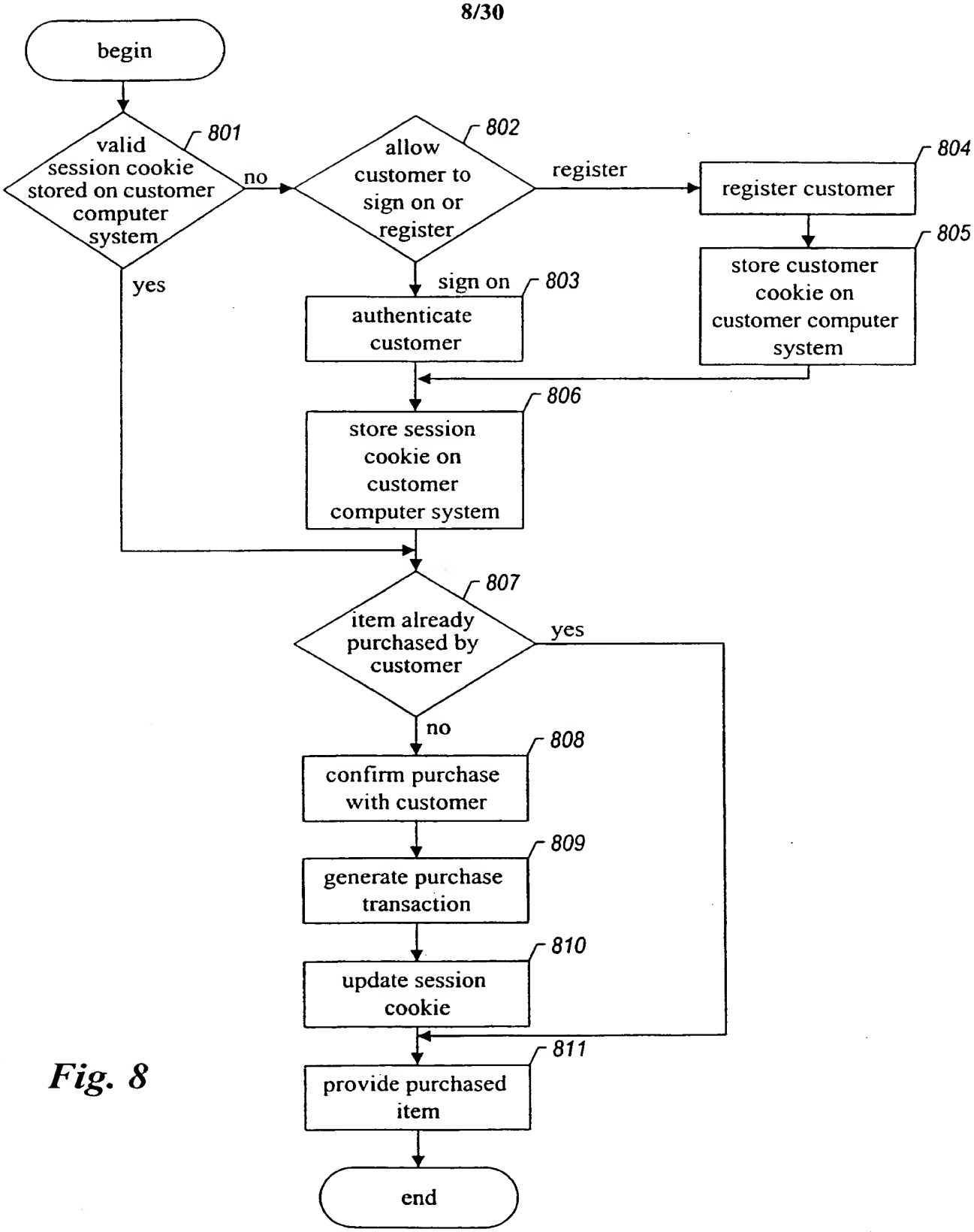

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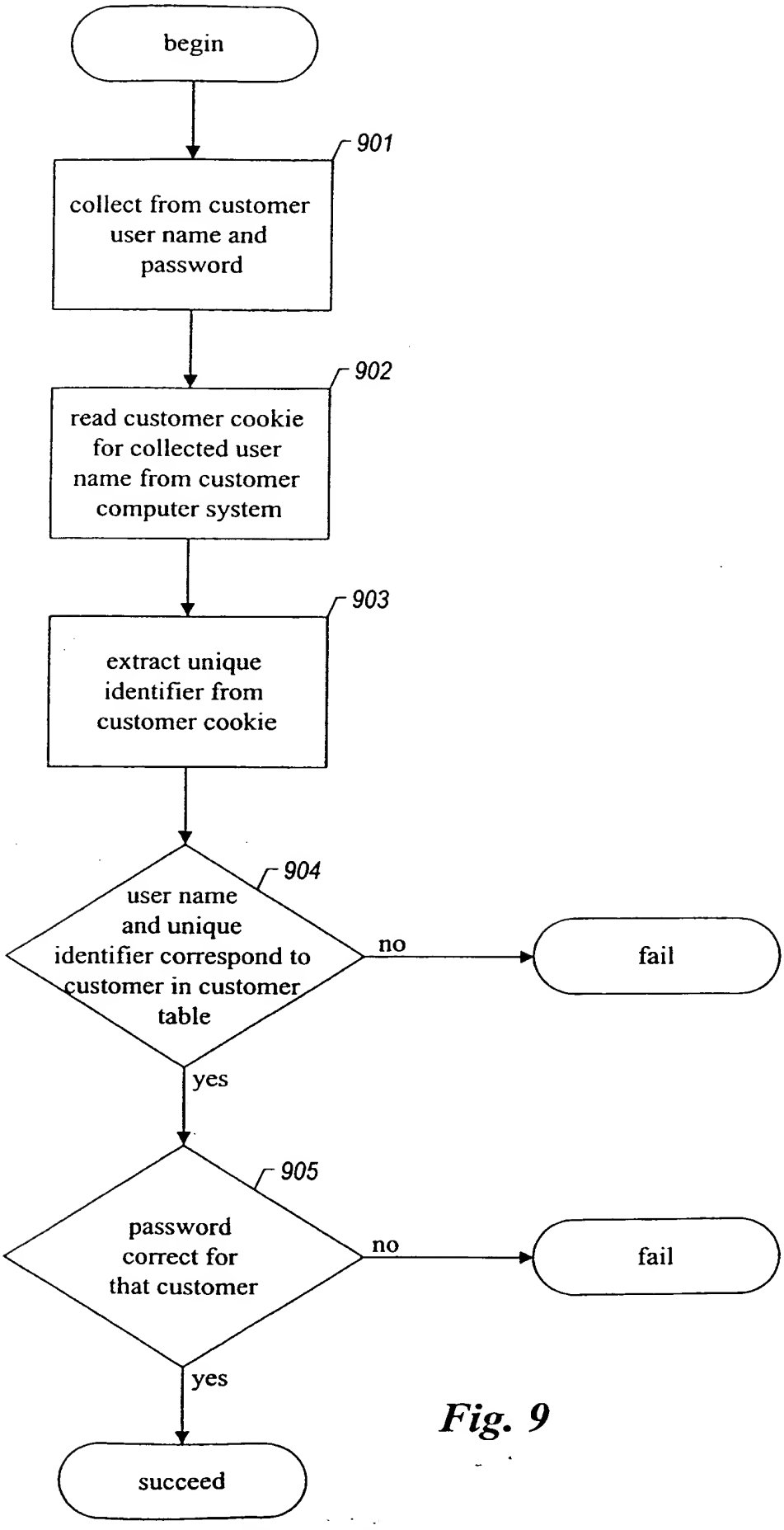

Fig. 9

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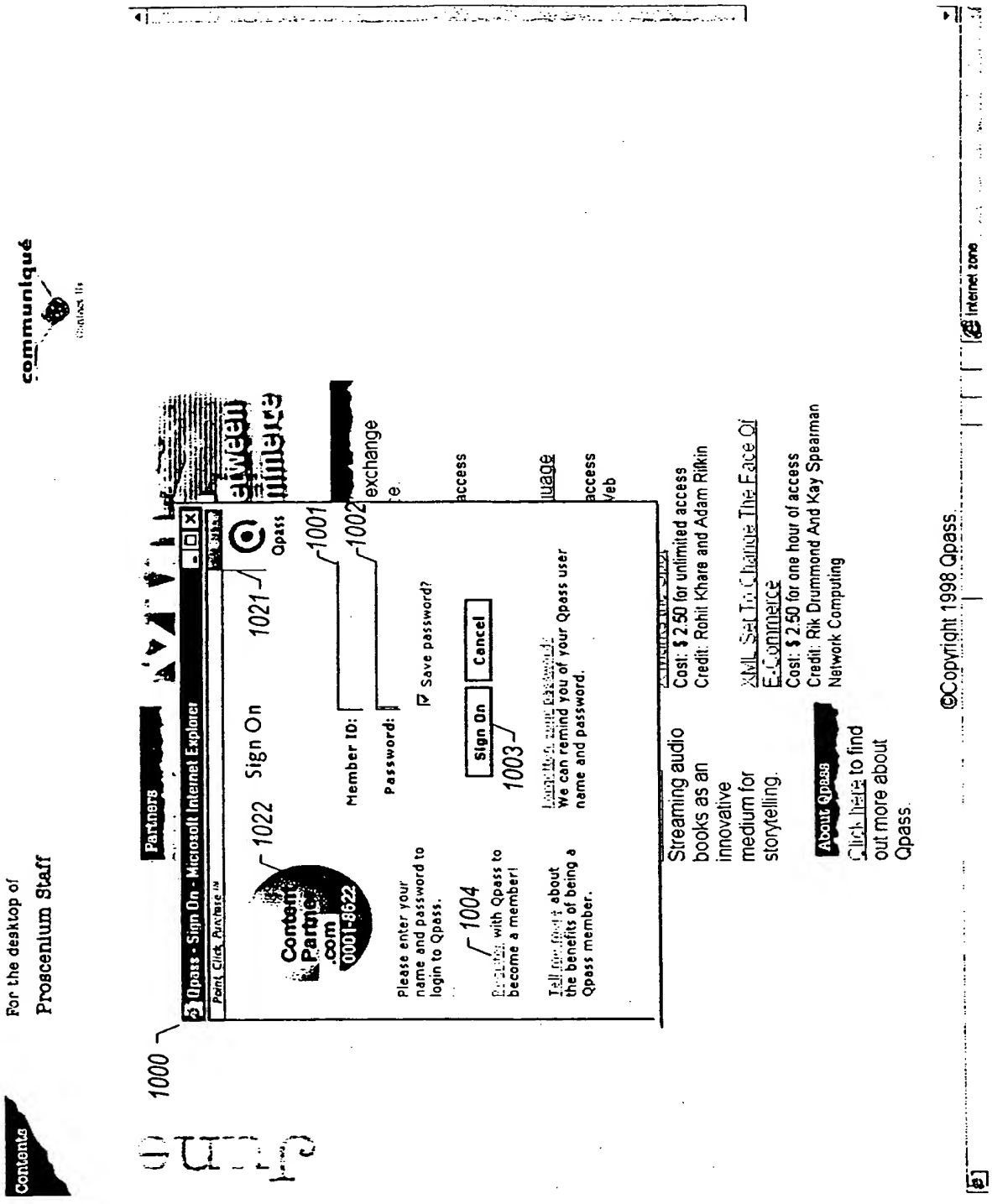

Fig. 10

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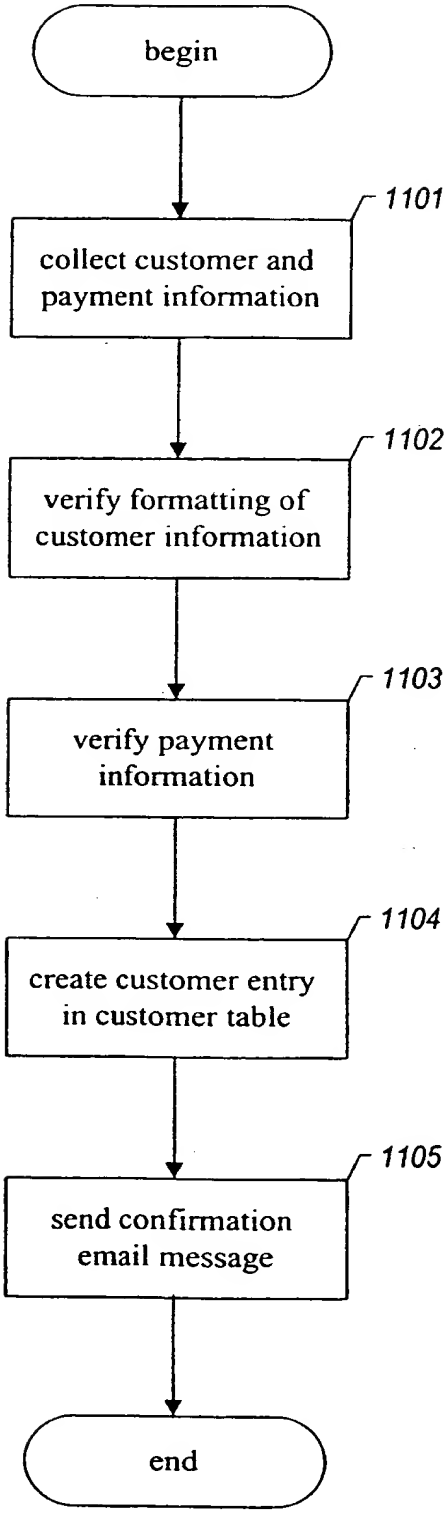

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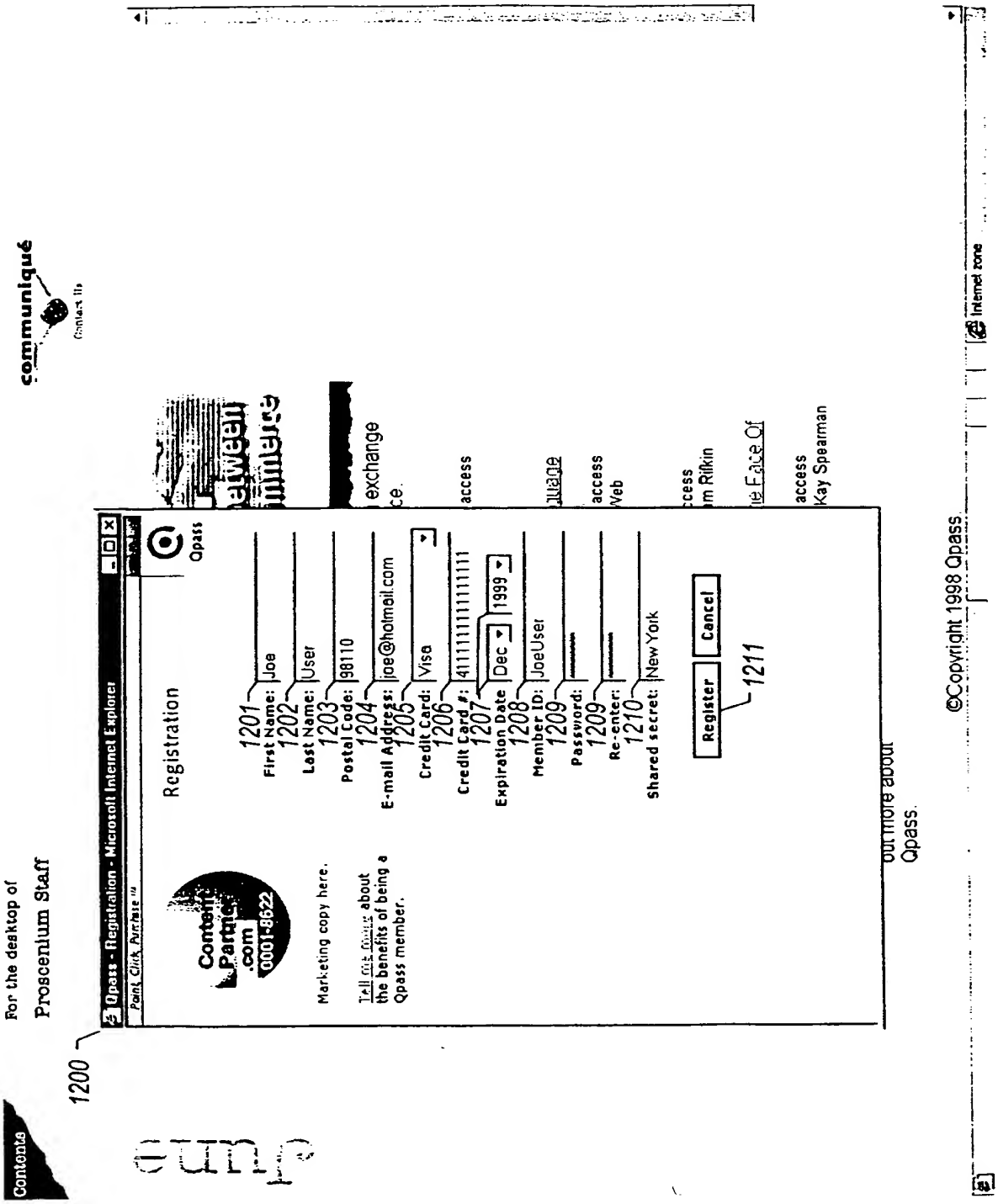

Fig. 12

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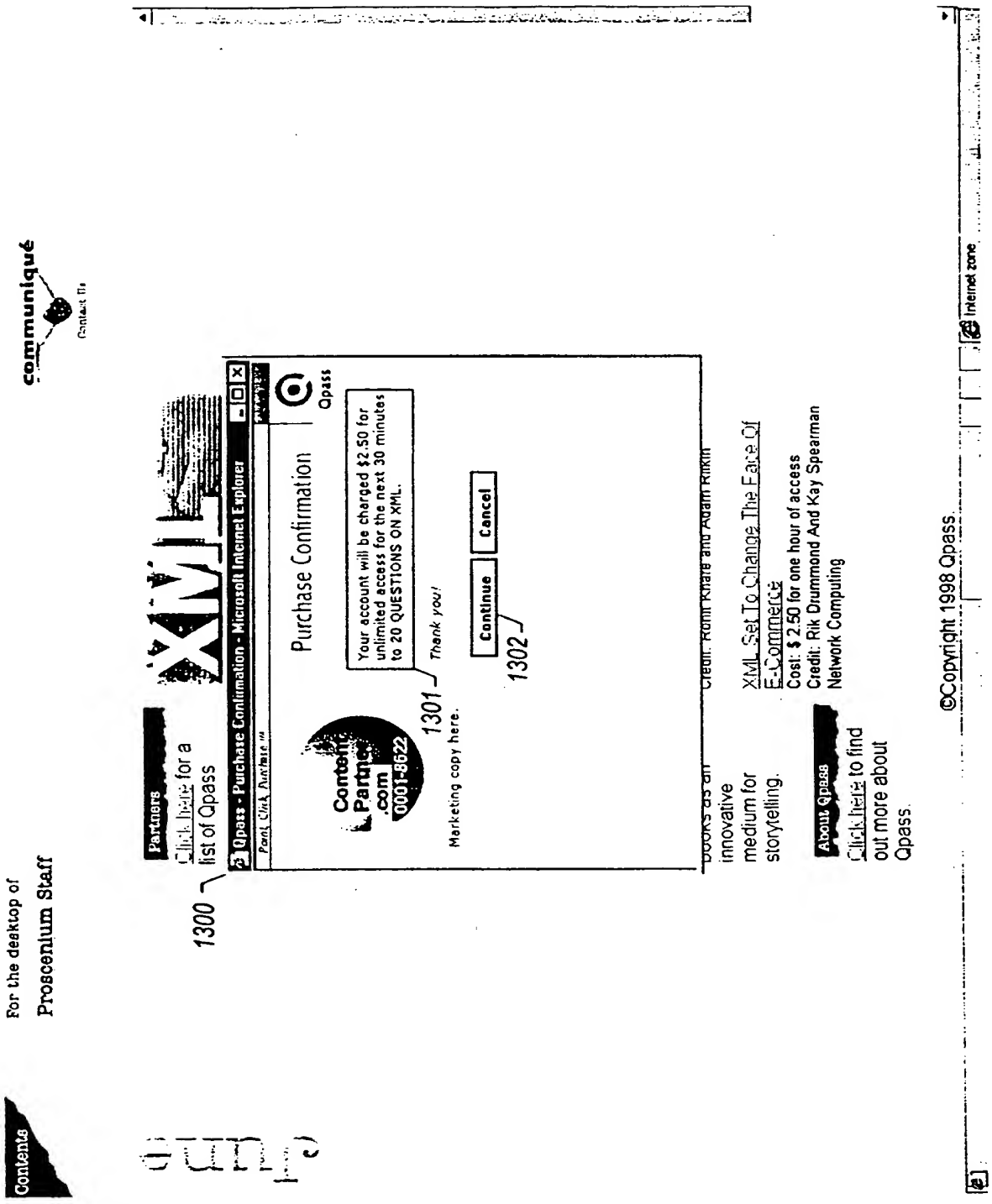

Fig. 13

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communiqué

For the desktop of

Prosecnium Staff

Contents

Featured Articles

"20 Questions on XML"
C/Net, Builder.com
By Trisha Gorman
(3/10/98)

Nearly everyone is talking about XML (Extensible Markup Language) these days. But few understand what it's really all about.

XML's proponents claim it will cure everything that's wrong with HTML and enable the seamless exchange of data between different applications and operating systems. Indeed, most observers agree that XML is poised to cause a revolution in content delivery and exchange. And those of you who get it first will probably benefit the most.

If you've been dying to learn more about XML but have been unable to find the time to dig through all the technical specs and marketing hyperbole, we have the perfect answer: let BUILDER.COM do the digging for you. We've asked and answered the top 20 questions about XML, and while they may not make you an XML expert, we guarantee they'll give you a better appreciation of just what this technology has in store for Web builders.

1. What is XML?
2. Why is XML important?
3. How are SGML, HTML, and XML related?
4. How will XML be implemented?
5. What is a Document Type Definition (DTD)?

Internet zone

Fig. 14

BNSDOCID: <WO_____0033221A1_IA>

1500

Best Market Reports

[Home] [Search] [GLOBUS & NTDB] [E-mail] Previous Page Next Page

1501 Program Description
1502 AGRICULTURAL CHEMICALS FY98
1503 AGRICULTURAL EQUIPMENT FY98
1504 AIR CONDITIONING/REFRIGER'N EQUP FY98
1505 AIRCRAFT AND PARTS FY98
1506 AIRPORT/GROUND SUPPORT EQUIP FY98
1507 APPAREL FY98
1508 ARCHITECTURE/CONSTR/ENGINEER'G FY98
1509 AUTOMOTIVE PARTS/SERVICE EQUIPMENT FY98
1510 AUTOS AND TRUCKS FY98
1511 BOOKS AND FILMS FY98
1512 BUILDING PRODUCTS FY98
1513 CHEMICAL AND PLASTICS PROD EQUIP FY98
1514 CHEMICALS AND COMPOSITES FY98
1515 COMMERCIAL AND PLEASURE BOATS FY98
1516 COMPUTER SOFTWARE FY98
1517 COMPUTERS AND BUSINESS EQUIP FY98
1518 COMPUTER/INFORMATION SERVICES FY98
1519 CONSTRUCTION EQUIPMENT FY98
1520 COSMETICS AND TOILETRIES FY98
1521 DEFENSE INDUSTRY EQUIPMENT FY98
1522 DRUGS AND PHARMACEUTICALS FY98
1523 EDUCATION/TRAINING FY98
1524 ELECTRICAL POWER SYSTEMS FY98
1525 ELECTRONIC COMPONENTS FY98
1526 ELECTRONICS IND PROD/TEST EQUIP FY98

Internet zone

Fig. 15

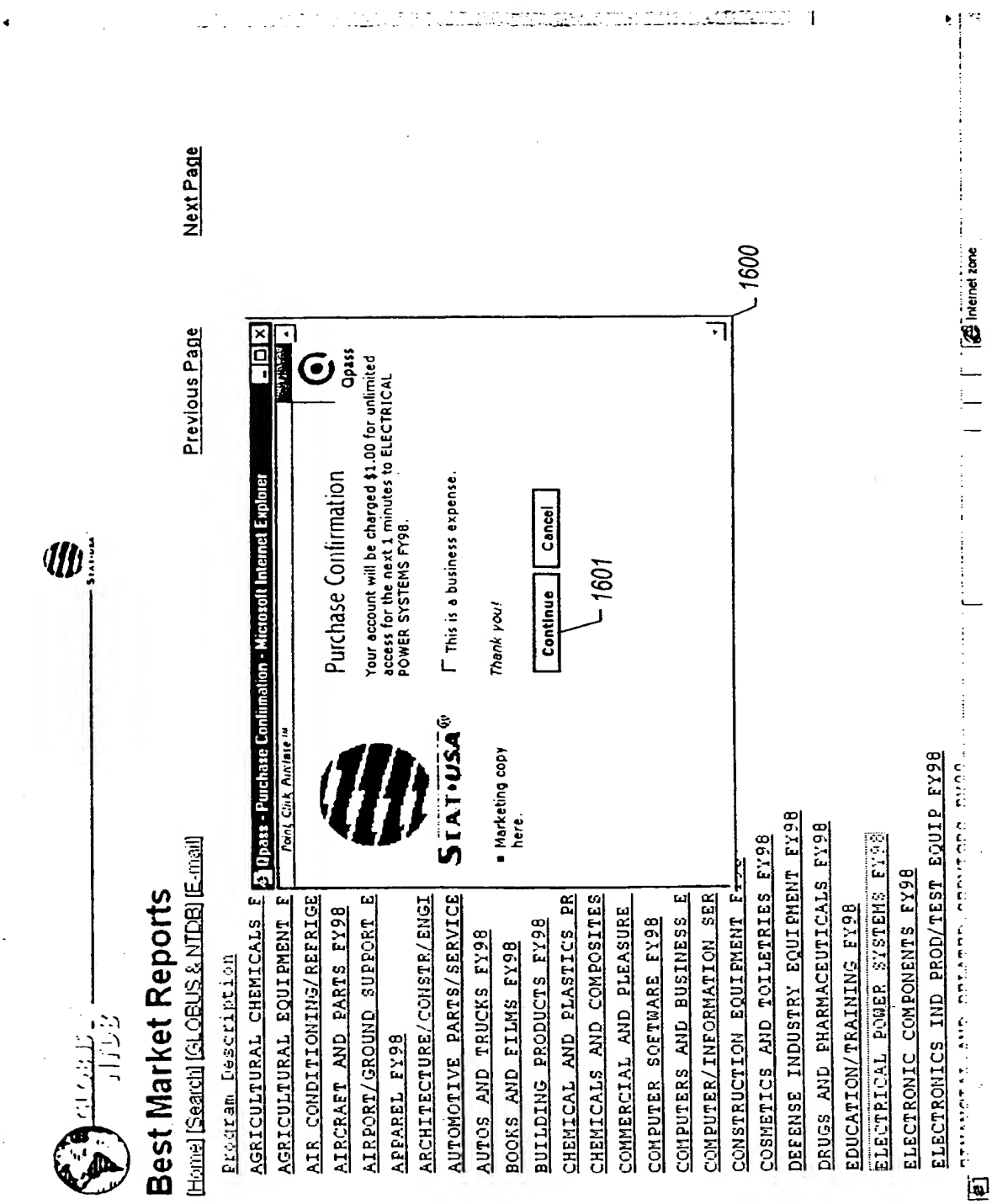

Fig. 16

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ELECTRICAL POWER SYSTEMS FY98 BEST MARKET REPORTS USDOC, INTERNATIONAL TRADE ADMINISTRATION
Product ID 24

TITLE: ELECTRICAL POWER SYSTEMS FY98

SUBJECT COUNTRY(IES): WORLD

POST OF ORIGIN: COMMERCE

SERIES: BEST MARKET REPORTS (BMR)

ITA INDUSTRY CODE: ELP, REQ

DATE OF REPORT (YYMMDD): 971027

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Best Market Report FY98:
ELECTRICAL POWER SYSTEMS

ELECTRICAL POWER SYSTEMS

Countries included:

ARGENTINA

Done

Local intranet zone

Fig. 17

SUBSTITUTE SHEET (RULE 26)

1800 transaction table

	1801 Customer	1802 Merchant	1803 Item	1804 Amount	1805 Expiration	1806 Outstanding
	⋮					
1811	Jim	Customer News	Vacuum Rating Guide	US$ 3.00	None	Yes
1812	Joe User	Content Partner	20 Questions on XML	US$ 2.50	11/3/98 2:25 p.m.	Yes
1813	Joe User	Stat USA	Electrical Power Systems FX 98	US$ 1.00	11/3/98 9:11 a.m.	Yes
1814	Sally Shopper	Recipeland	Dessert Recipes	US$ 3.00	12/21/98 10:00 a.m.	No
1815	Sally Shopper	Recipeland	Lunch Recipes	US$ 0.25	11/30/98 12:00 a.m.	No
1816	Sally Shopper	Item Publishing	Home Journal	US$ 0.25	11/1/99 12:00 noon	Yes
1817	Sally Shopper	Finance Data	General Electric Annual Report	US$ 7.75	11/1/99 12:00 p.m.	Yes
1818	Sally Shopper	Autoworld	Fuel Pump Repair	US$ 1.00	3/5/99 9:00 a.m.	Yes
1819	Sally Shopper	Autoworld	Tire Upgrade	US$ 1.25	12/1/98 11:18 am	Yes
1820	Sam Client	Horticulture Today	Renewal Chart	US$ 0.75	12/29/99 12:00 a.m.	Yes
		⋮				

Fig. 18

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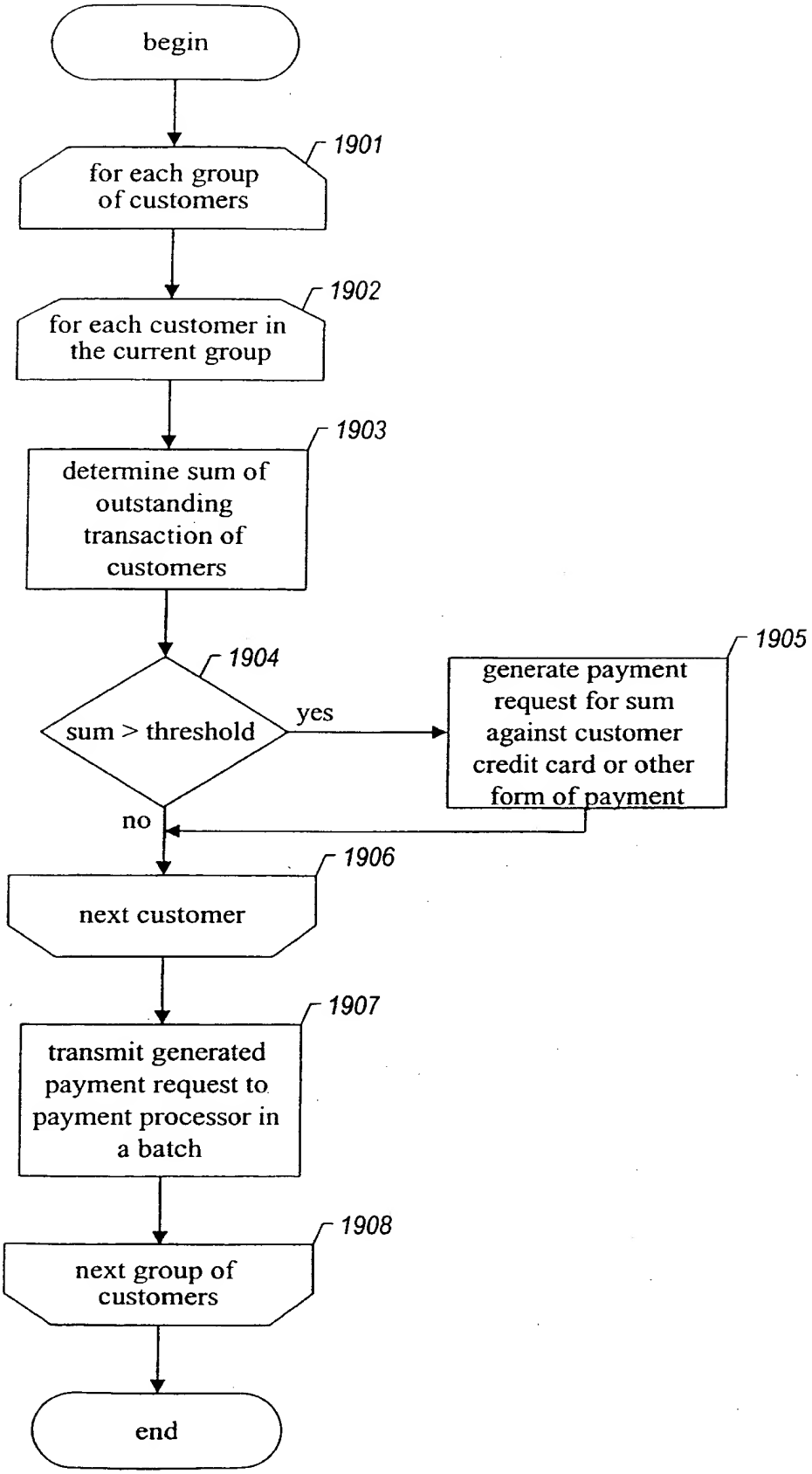

Fig. 19

SUBSTITUTE SHEET (RULE 26)

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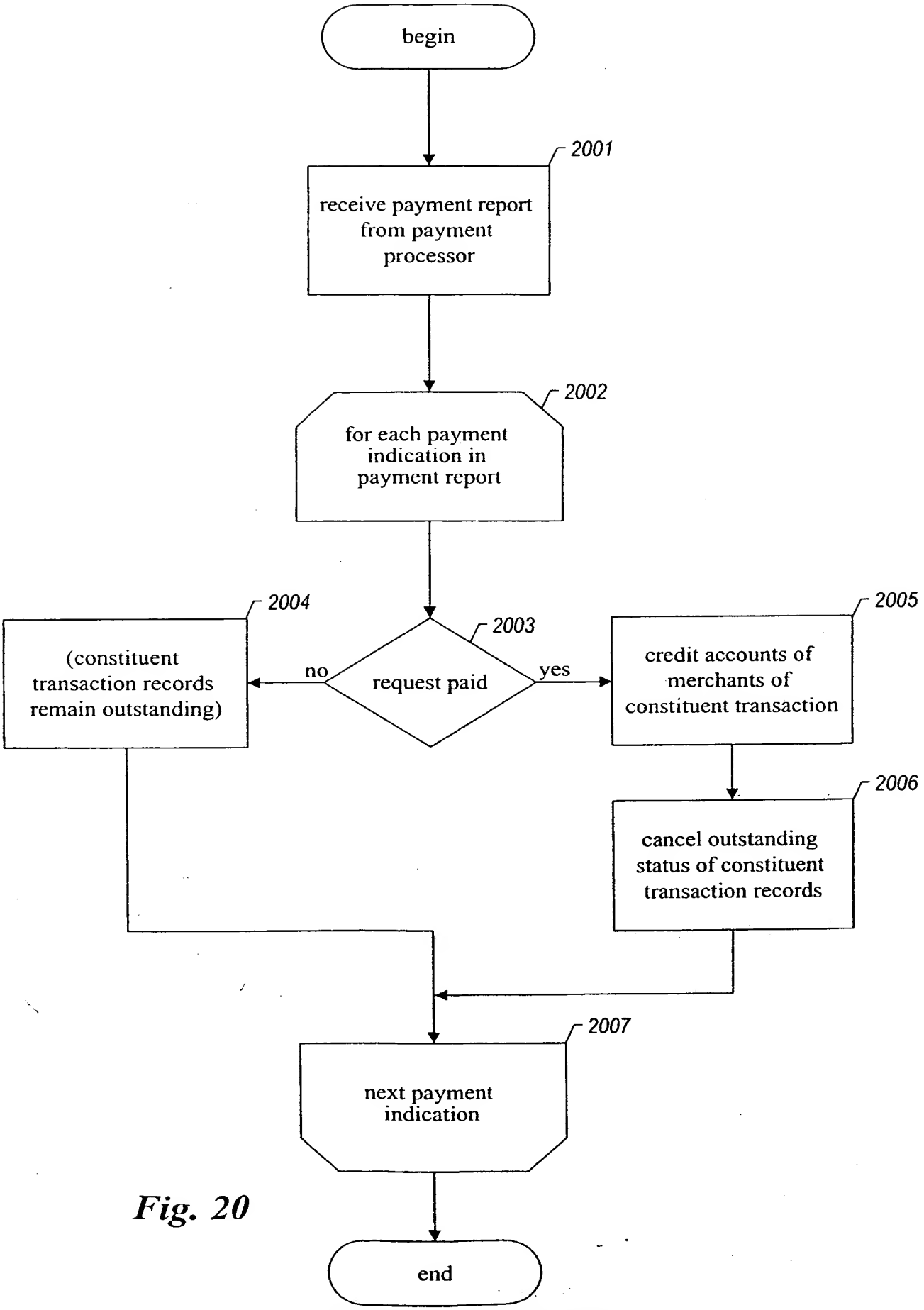

Fig. 20

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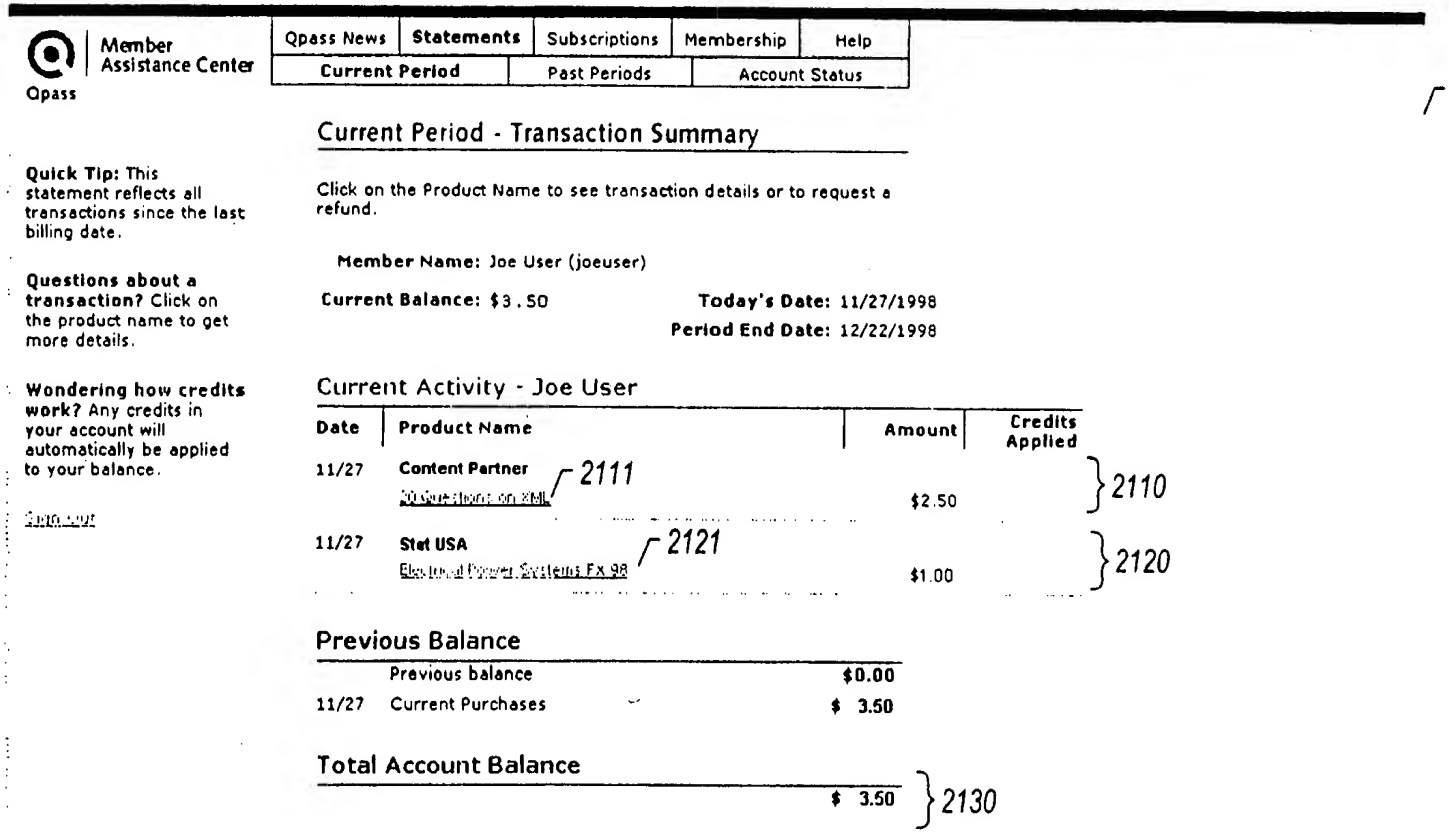

Fig. 21

SUBSTITUTE SHEET (RULE 26)

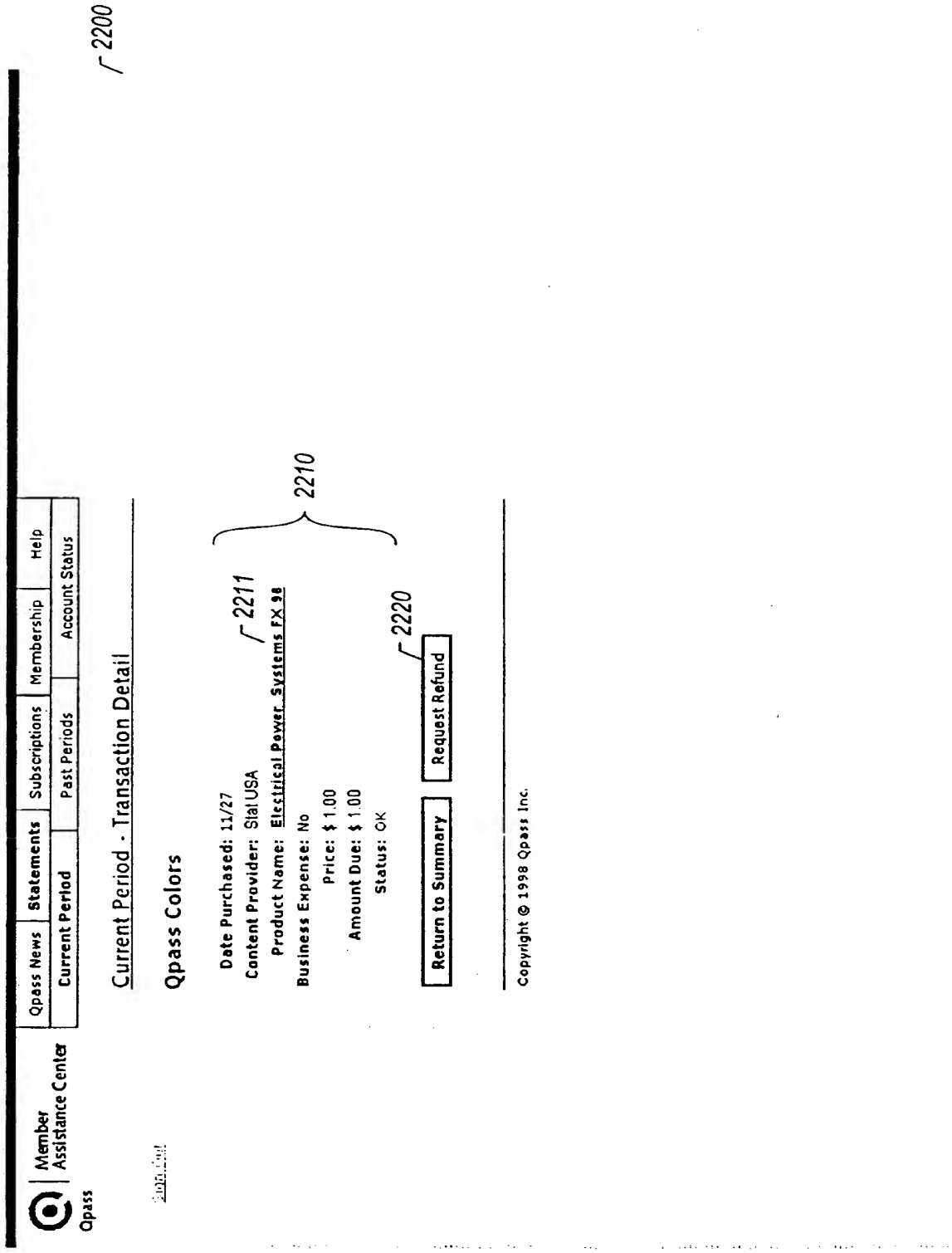

Fig. 22

BNSDOCID: <WO_____0033221A1_IA>

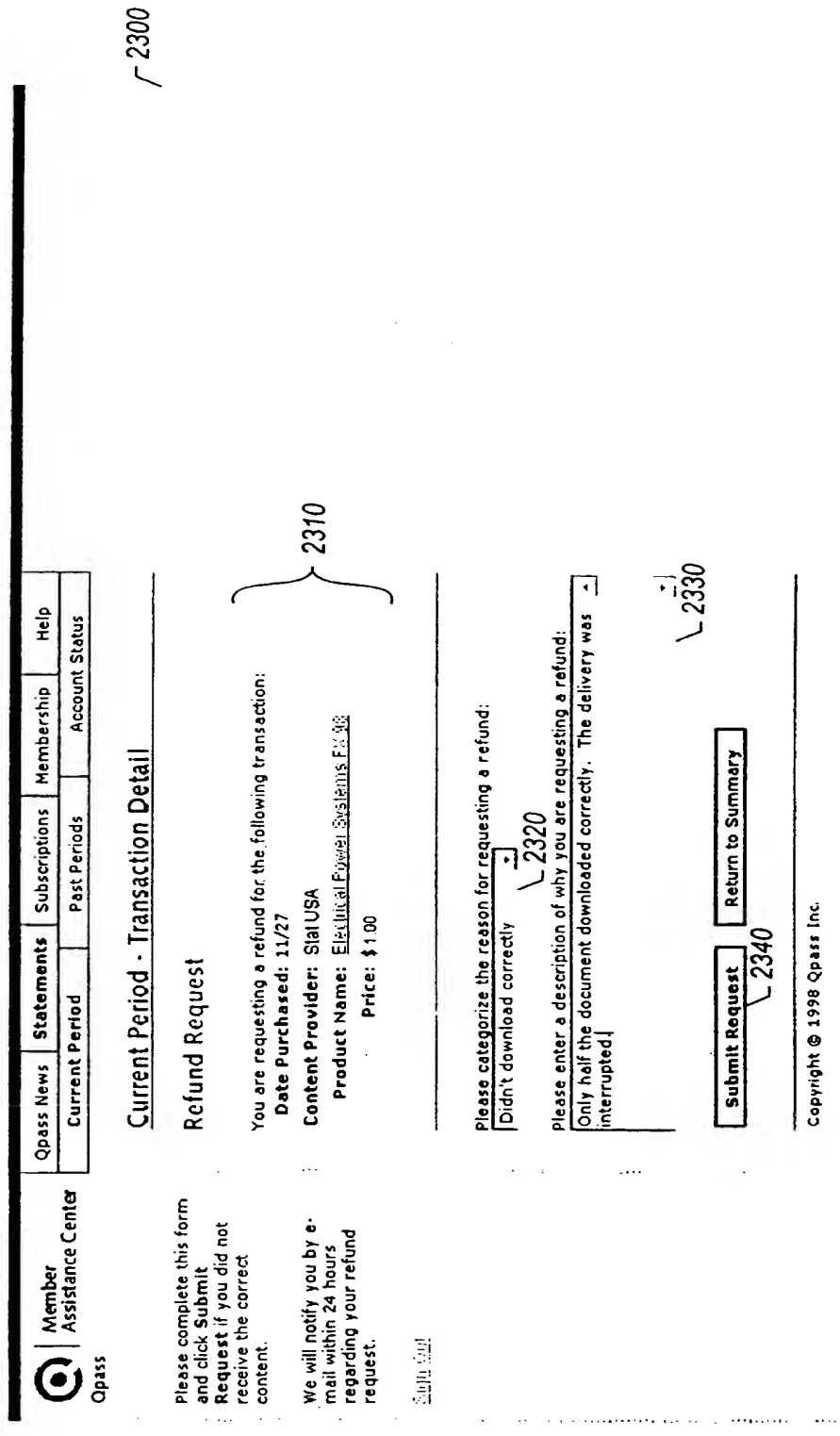

Fig. 23

BNSDOCID: <WO_____0033221A1_IA>

BNSDOCID: <WO_____0033221A1_IA>

SUBSTITUTE SHEET (RULE 26)

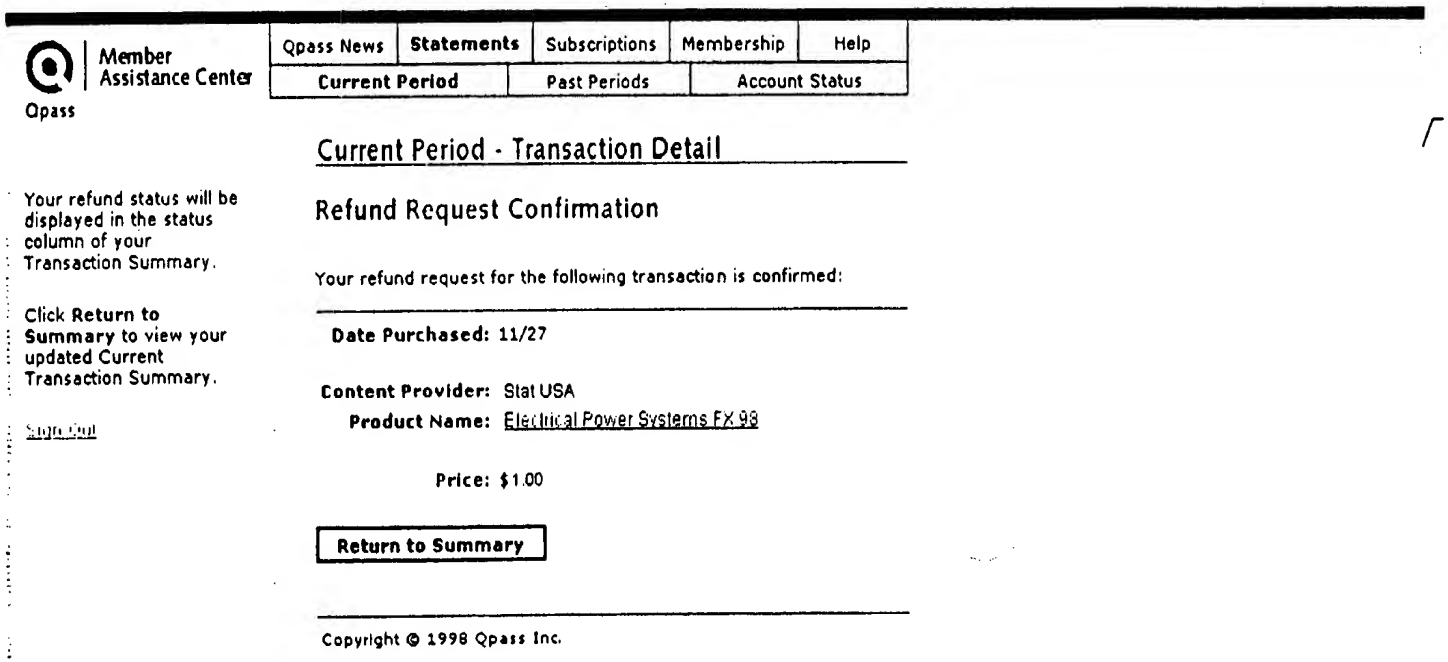

Fig. 24

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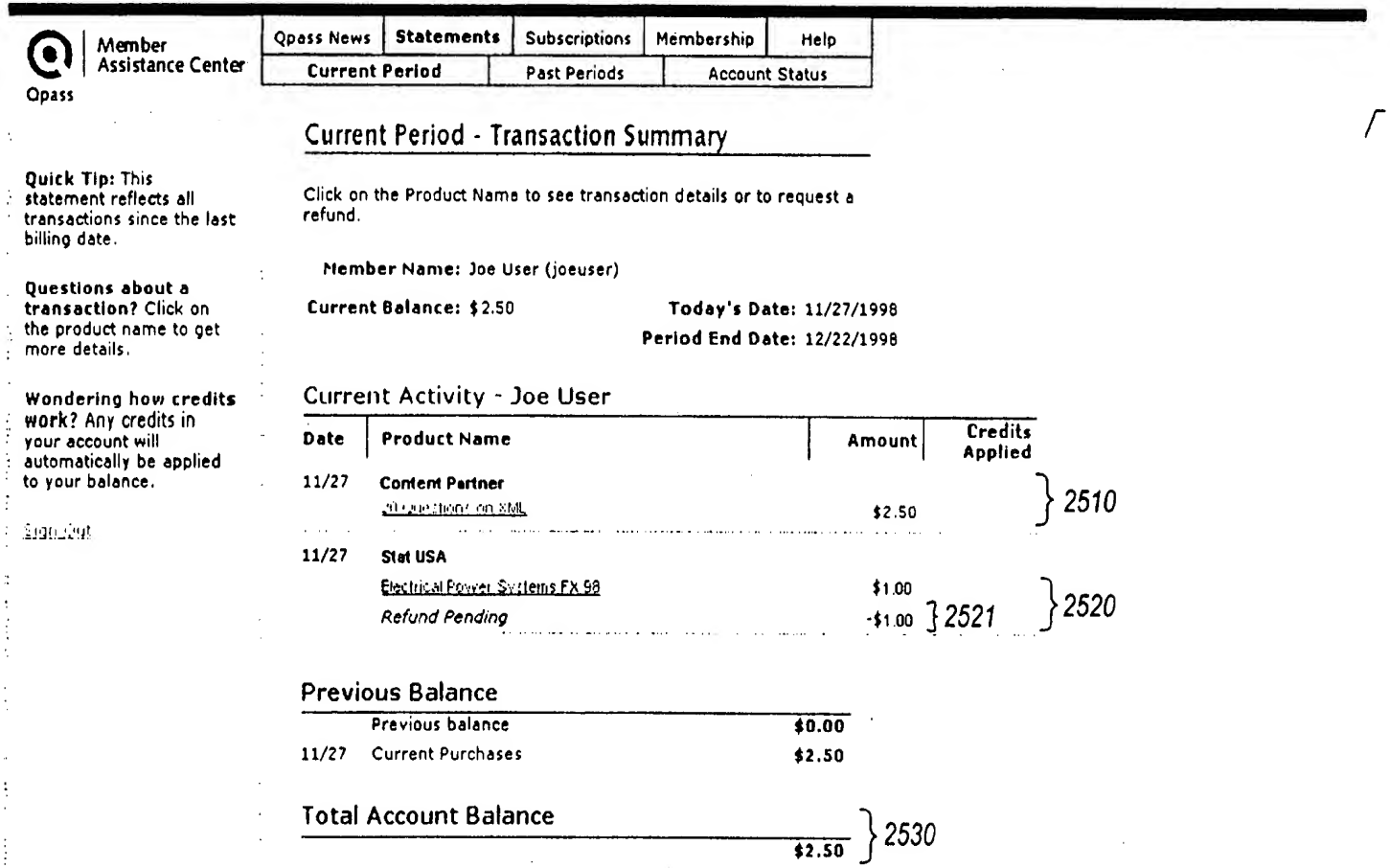

Fig. 25

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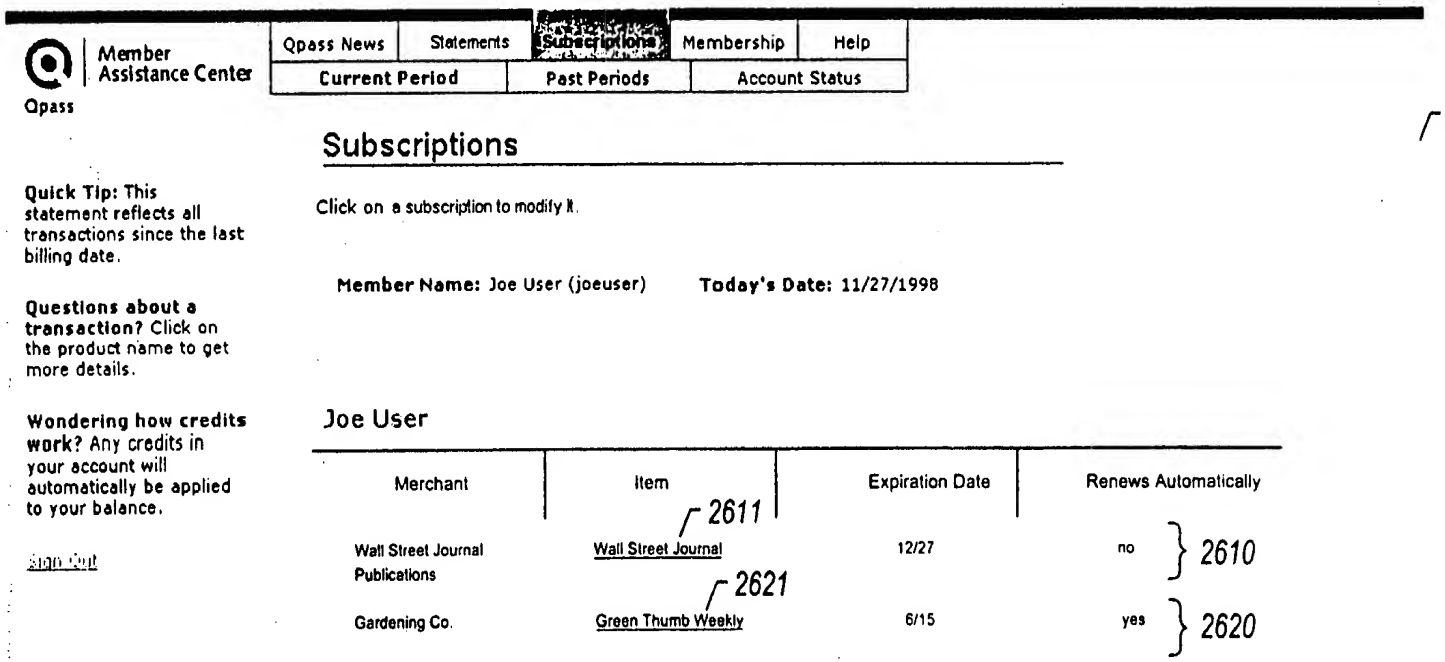

Fig. 26

SUBSTITUTE SHEET (RULE 26)

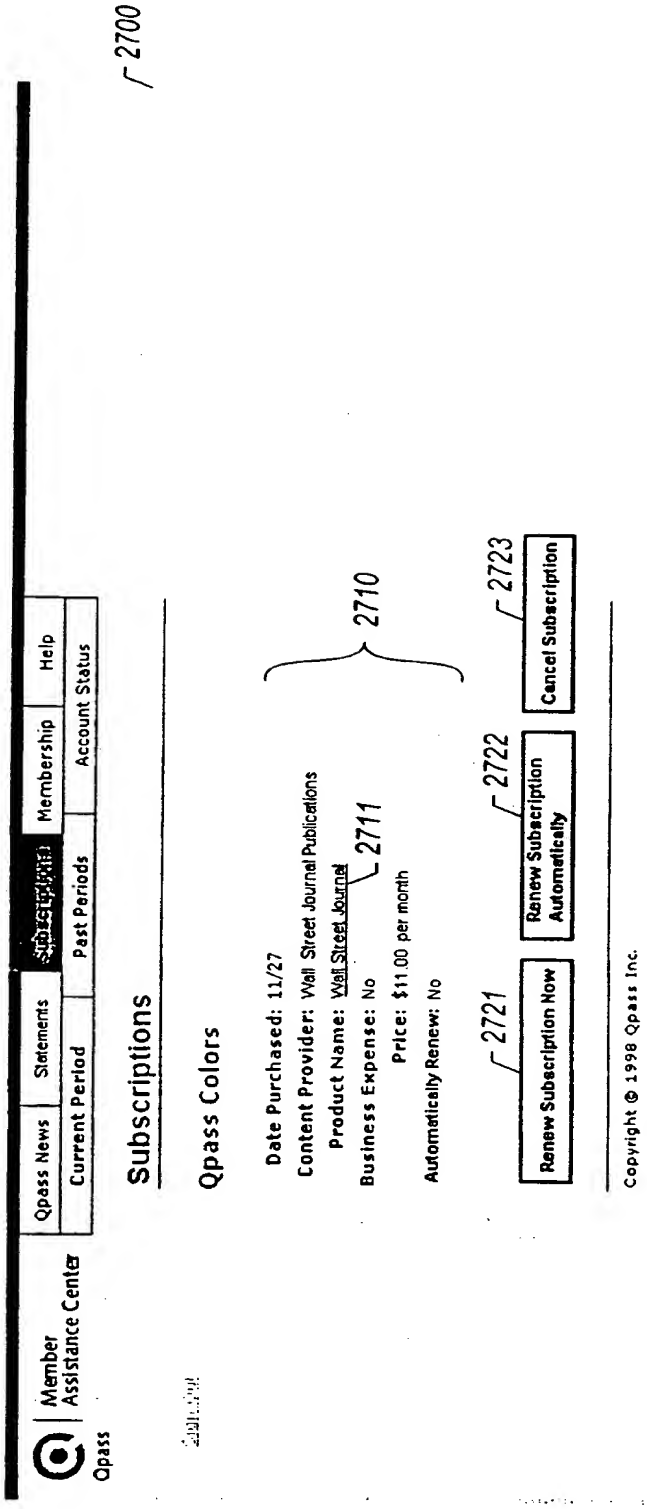

Fig. 27

BNSDOCID: <WO_____0033221A1_IA>

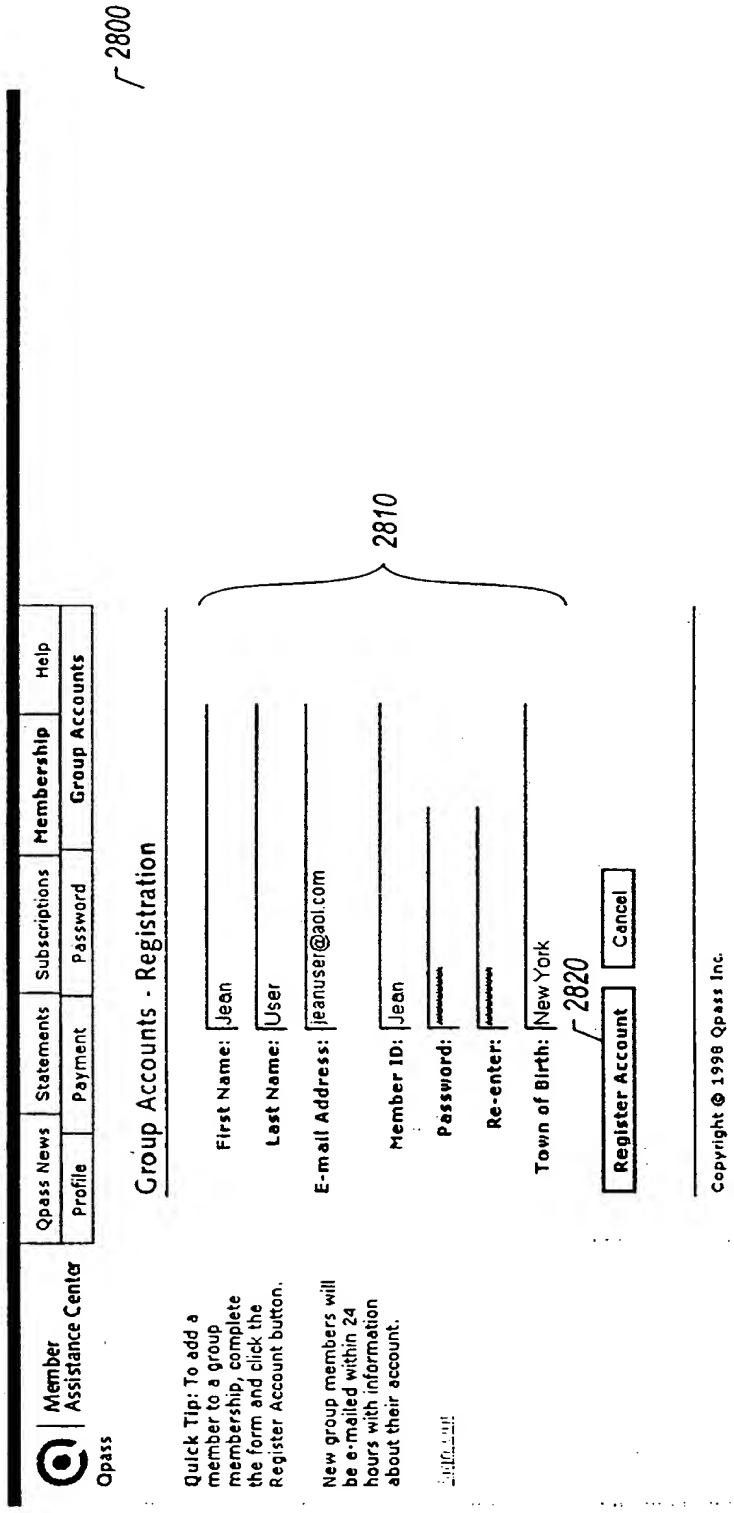

Fig. 28

BNSDOCID: <WO_____0033221A1_IA>

BNSDOCID: <WO_____0033221A1_IA>

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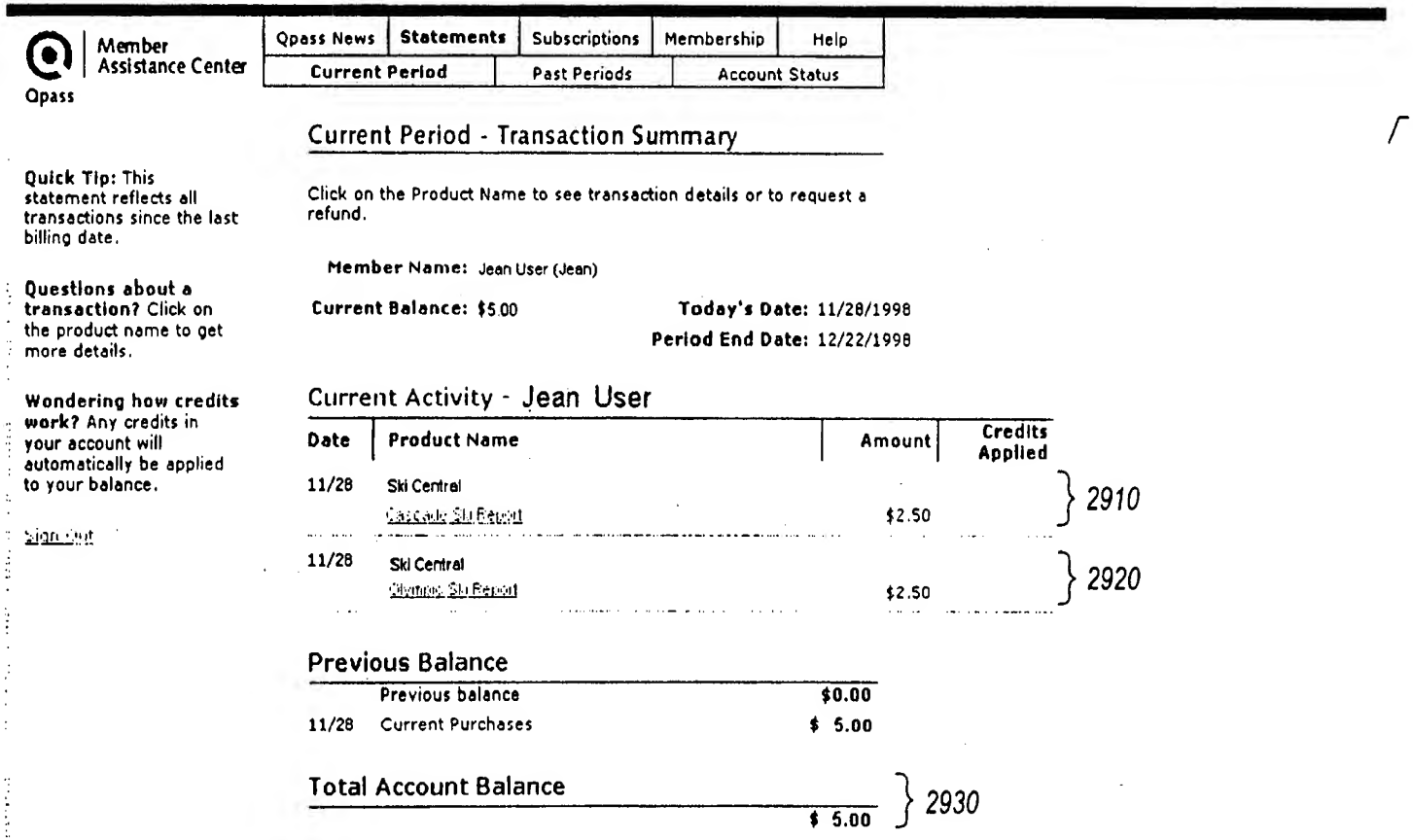

Fig. 29

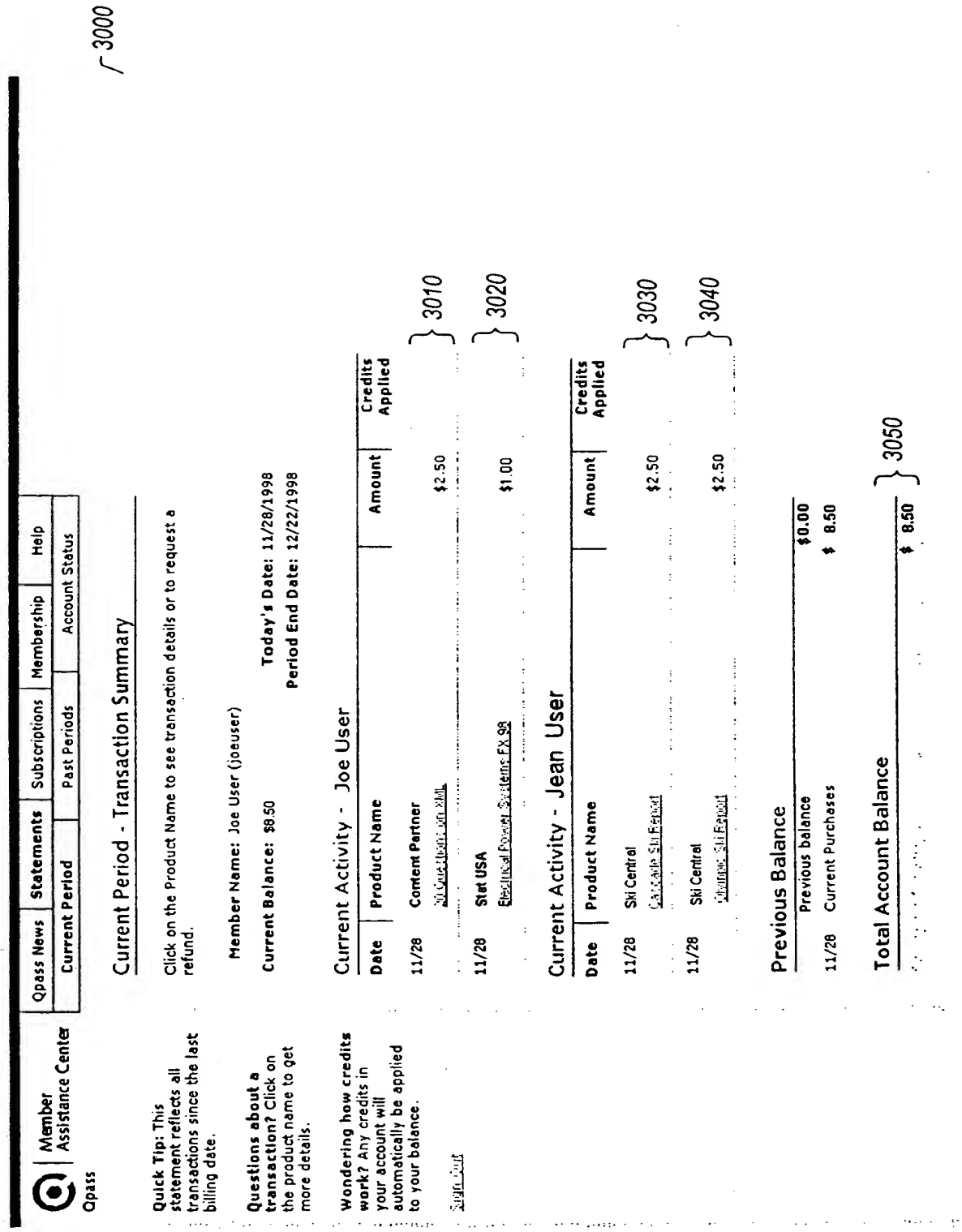

Fig. 30

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INTERNATIONAL SEARCH REPORT

Inter. nal Application No
PCT/US 99/27879

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BAKER: "In the money - QPass has big hopes for small Net sales" PUGET SOUND BUSINESS JOURNAL, 'Online! 12 October 1998 (1998-10-12), XP002134402 Seattle, WA, US Retrieved from the Internet: <URL:http://www.amcity.com/seattle/stories /1998/10/12/story3.html> 'retrieved on 2000-03-30! the whole document --- -/--	1-50

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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"O" document referring to an oral disclosure, use, exhibition or other means

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Date of the actual completion of the international search	Date of mailing of the international search report
30 March 2000	13/04/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Abram, R

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INTERNATIONAL SEARCH REPORT

Inter. nal Application No
PCT/US 99/27879

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	SIRBU ET AL: "NetBill: An Internet Commerce System Optimized for Network-Delivered Services" IEEE PERSONAL COMMUNICATIONS, vol. 2, no. 4, August 1995 (1995-08), pages 34-39; XP000517588 New York, NY, US the whole document	1-50
A	RAFTER: "Micropayment Firms Seek New Ways to Cash In" THESTANDARD, 'Online! 28 May 1998 (1998-05-28), XP002134403 Retrieved from the Internet: <URL:http://www.thestandard.com/article/display/0,1151,423,00.html> 'retrieved on 2000-03-30! the whole document	1-50
A	US 5 684 965 A (PICKERING) 4 November 1997 (1997-11-04) the whole document	
A	US 5 247 575 A (SPRAGUE ET AL) 21 September 1993 (1993-09-21) the whole document	

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INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter. nal Application No
PCT/US 99/27879

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		EP 0692119 A	17-01-1996
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